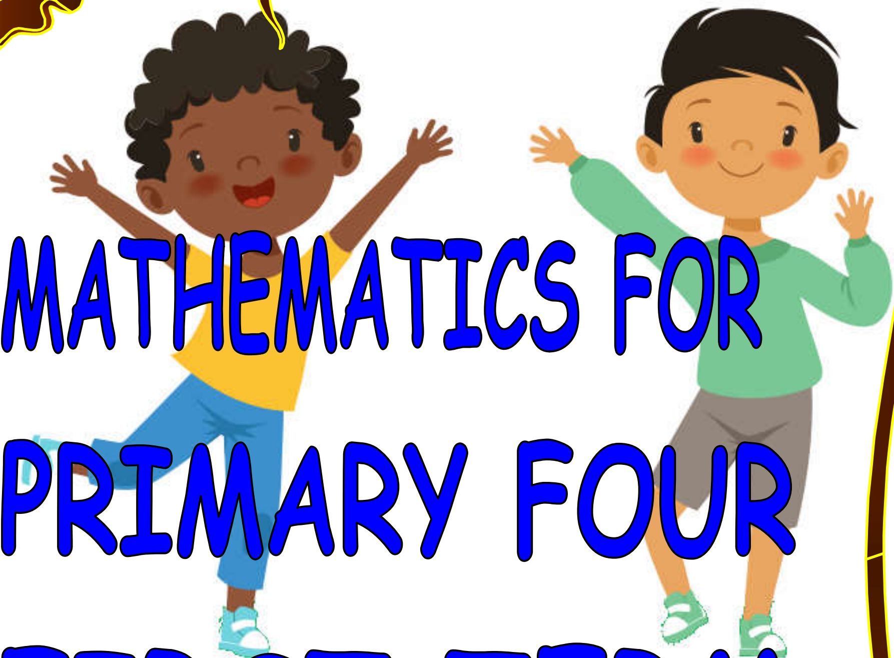


MATHEMATICS FOR PRIMARY FOUR FIRST TERM







UNIT
1

Theme 1 | Number Sense and Operations

Unit 1
Place Value

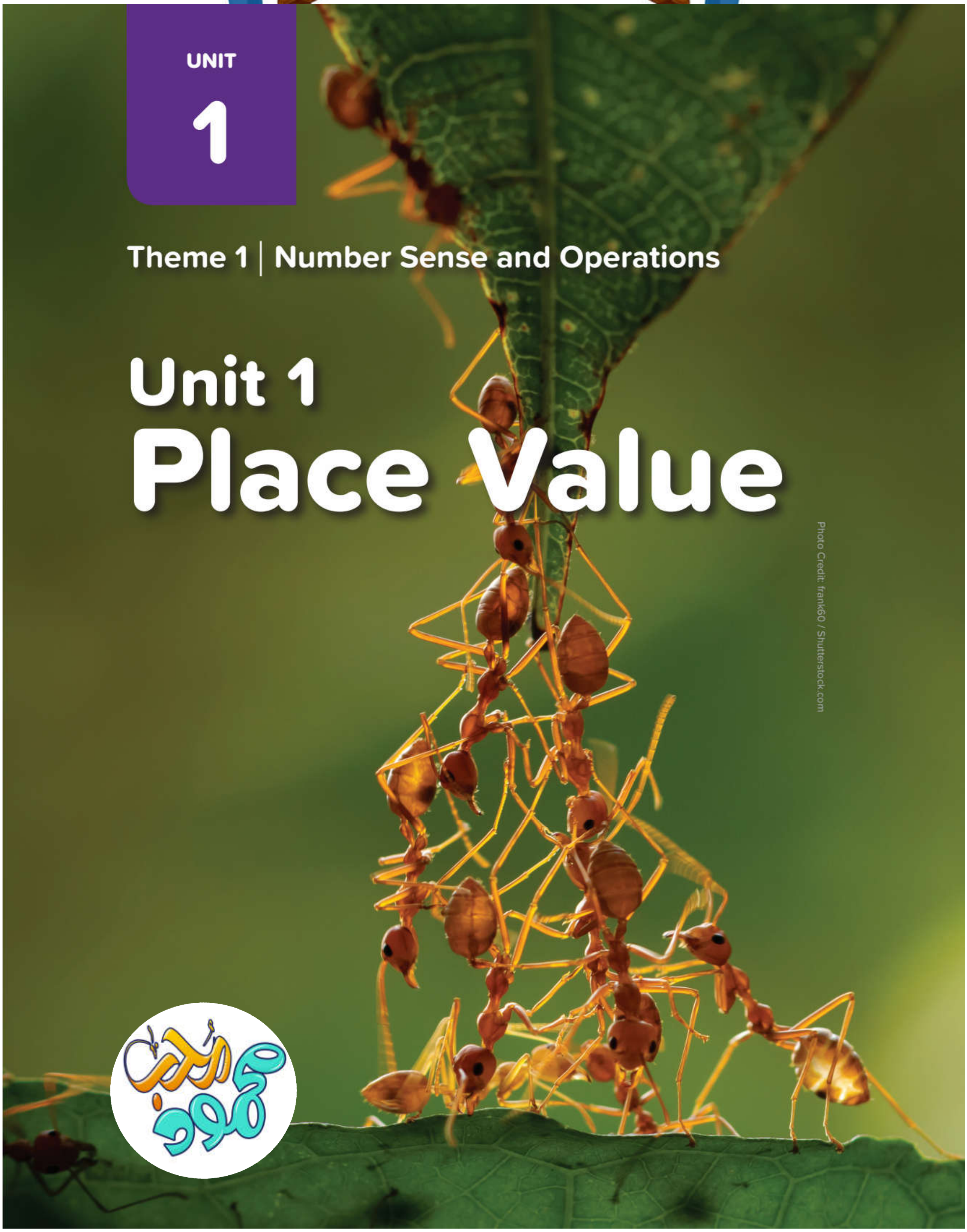


Photo Credit: frank60 / Shutterstock.com

Concept (1): Reinforcing Place Value

Digit

it is a **single symbol** used to make numerals. Digits are **limited**, starting from the digit **0** and ending with the digit **9** (Ten digits: 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9).

Number

It is an **amount** related to the numeral and consists of one or more digits. The numbers are unlimited and **endless**.

Numeral

It is a **symbol** or **name** that stands for a **number**. Examples: 3, 49 and twelve are all numerals.

PRACTICE

Write each number in the appropriate column. Some may go in more than one column.

983	thirty-seven	six	0
9	seventy-five	2,300,540	one hundred

Digit	Number	Numeral
0 9	0 9 983 2,300,540	983 thirty-seven six 0 9 seventy-five 2,300,540 one hundred

Put (✓) in the suitable place:

		Digit	Number	Numeral
1	2			
2	31			
3	236			
4	Twenty			
5	0			
6	11			
7	Forty-six			
8	236 917			
9	Nine			
10	2			

The Place Value

- **In the following number: 372 865**

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
3	7	2	8	6	5

The Place-value:	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones
	3	7	2	8	6	5
The Value:	300 000	70 000	2 000	800	60	5

Find the value of the underlined digit.

2. 703,890 ______

3. 63,540 ______

4. 182,034 ______

5. 345,890 ______

Find the value of the underlined digit.

8. 230,001 ______

9. 803,040 ______

10. 46,842 ______

11. 980,650 ______

17. THINKSMARTER For numbers 17a–17e, select True or False for each statement.

17a.	The value of 7 in 375,081 is 7,000.	○ True	○ False
17b.	The value of 6 in 269,480 is 600,000.	○ True	○ False
17c.	The value of 5 in 427,593 is 500.	○ True	○ False
17d.	The value of 1 in 375,081 is 10.	○ True	○ False
17e.	The value of 4 in 943,268 is 40,000.	○ True	○ False

Composed and decomposed numbers:

Composed 345,532

Decomposed (3 x 100,000) + (4 x 10,000) + (5 x 1,000) + (5 x 100) + (3 x 10) + (2 x 1)

Milliards	Millions			Thousands			Ones		
O	H	T	O	H	T	O	H	T	O
				3	4	5	5	3	2

1. **Composed** 6,124,030,420

Decomposed ______________________

Milliards	Millions			Thousands			Ones		
O	H	T	O	H	T	O	H	T	O

2. **Composed** ______________________

Decomposed ______________________

Milliards	Millions			Thousands			Ones		
O	H	T	O	H	T	O	H	T	O
5	4	0	0	1	5	9	0	2	4

3. **Composed** ______________________

Decomposed (7 x 1,000,000,000) + (5 x 10,000,000) + (4 x 10,000) + (3 x 1,000) + (5 x 100) + (9 x 1)

Milliards	Millions			Thousands			Ones		
O	H	T	O	H	T	O	H	T	O

PRACTICE

Solve the problems. Show your work.

1. Colony A has 268,820 Pharaoh Ants living in it. Decompose this numeral as you did in BUILD.

2. Yara's class learned that the distance from the Earth to the Moon can be written as 300,000 + 80,000 + 4,000 + 400 kilometers. Compose this numeral.

Decompose the numerals that follow using expanded form.

3. 105,208

____

4. 2 million, 277 thousand, 191

____

5. three milliard, one hundred thirty-seven million, six hundred nineteen thousand, eighty-eight

____

What Is My Value? Follow the steps to explore how a digit's value changes when its location changes.

- Choose one digit and enter it in the Ones place.
- Record the value of the digit.
- Continue moving the digit card to the left on the place value chart, recording its new value each time.

Milliards	Millions			Thousands			Ones		
O	H	T	O	H	T	O	H	T	O

My digit is ______________

Value of my digit in the Ones place ______________

Value of my digit in the Tens place ______________

Value of my digit in the Hundreds place ______________

Value of my digit in the Thousands place ______________

Value of my digit in the Ten Thousands place ______________

Value of my digit in the Hundred Thousands place ______________

Value of my digit in the Millions place ______________

Value of my digit in the Ten Millions place ______________

Value of my digit in the Hundred Millions place ______________

Value of my digit in the One Milliards place ______________

HANDS-ON ACTIVITY: Creating the Greatest

Play Creating the Greatest with a partner to practice creating numbers and writing them in multiple forms.

- Combine decks of digit cards with your partner. Place the cards face down in a pile and mix them up.
- Turn over 10 digit cards and record the numbers in the order in which you turned them over.
- Rearrange the 10 cards to create the greatest numeral.
- Record the numeral in standard form, word form, and expanded form.

1. ____ ____ ____ ____ ____ ____ ____ ____ ____ ____

   Standard Form ____________________

   Expanded Form ____________________

   Word Form ____________________

   ____

2. ____ ____ ____ ____ ____ ____ ____ ____ ____ ____

   Standard Form ____________________

   Expanded Form ____________________

   Word Form ____________________

   ____

3. ____ ____ ____ ____ ____ ____ ____ ____ ____ ____

   Standard Form ____________________

   Expanded Form ____________________

   Word Form ____________________

   ____

Complete the table:

	Standard Form	Expanded Form	Word Formures
1	565		
2			four thousand, seven hundred six
3	2,345,222,197		
4			eight milliard, four hundred twenty-seven million, nine hundred ninety-five thousand, forty-nine
5		6,000,000,000 + 400,000,000 + 30,000,000 + 6,000,000 + 20,000 + 3,000 + 500 + 4	



Form the greatest and the smallest number:

4 0 1 8 3 7 6 5 2 9

The greatest number: ....

The Smallest number: ....

4 5 1 9 3 7 6 5 2

The greatest number: ....

The Smallest number: ....



0 1 8 3 7 6 5 2 4

The greatest number: ....

The Smallest number: ....

4 1 0 3 7 6 5 2

The greatest number: ....

The Smallest number: ....

1 8 5 1 6 0 2 9

The greatest number: ....

The Smallest number: ....

Complete the following table:

Numbers	Milliards	Millions			Thousands			H	T	O
	O	H	T	O	H	T	O			
5 406 548 987										
3 589 021 479										
	5	4	6	3	9	8	7	1	5	9
	1	6	4	7	8	5	2	0	8	2

Complete:

(1) 5,326,548,987 = ……… billion, ……… million, ……… thousand & ………

(2) 2,163,900,800 = ……… billion, ……… million, ……… thousand & ………

(3) 4,132,876,514 = ……… billion, ……… million, ……… thousand & ………

(4) 7,325,165,273 = ……… billion, ……… million, ……… thousand & ………

(5) 5,153,276,542 = ……… billion, ……… million, ……… thousand & ………

(6) 5,180,070,506 = ……… billion, ……… million, ……… thousand & ………

(7) 6,537,002,054 = ……… billion, ……… million, ……… thousand & ………





Write the value and the place value of the red digit:

The number	The value	The place value
4,325,526,412	....	....
8,523,256,412	....	....
2,732,154,546	....	....
5,124,652,487	....	....
1,541,656,218	....	....
9,148,562,487	....	....
4,562,732,154	....	....

Homework

Compare the numbers below and circle the greater number in each row:

23,410	22,999
111,223	101,345
4,890	4,891

Use the digits 3, 5, 7, 8, 8, 1, 6, 2 to make the greatest number you can. Then use the same digits to make the smallest number you can.

What is the value of the following?

A. 9 in the Tens place? ____________________

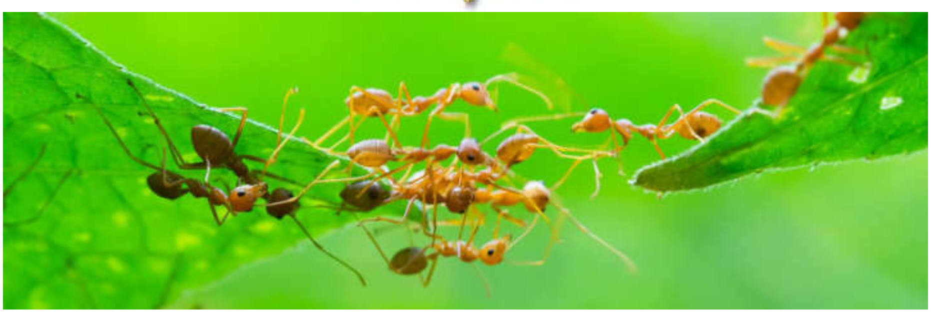
B. 3 in the Hundreds place? ____________________

C. 60 Tens? ____________________

D. 80 Thousands? ____________________

Complete the table:

	Standard Form	Expanded Form	Word Formures
1	565		
2			four thousand, seven hundred six
3	2,345,222,197		
4			eight milliard, four hundred twenty-seven million, nine hundred ninety-five thousand, forty-nine
5		6,000,000,000 + 400,000,000 + 30,000,000 + 6,000,000 + 20,000 + 3,000 + 500 + 4	



Decompose the following numerals as you did in BUILD.

	Word Form	Decomposed
2	nine million, four hundred forty thousand, two hundred twenty	
3	six milliard, nine hundred million, ten thousand four	
4	eight million, seventy thousand, two hundred	
5	twenty-seven hundred	



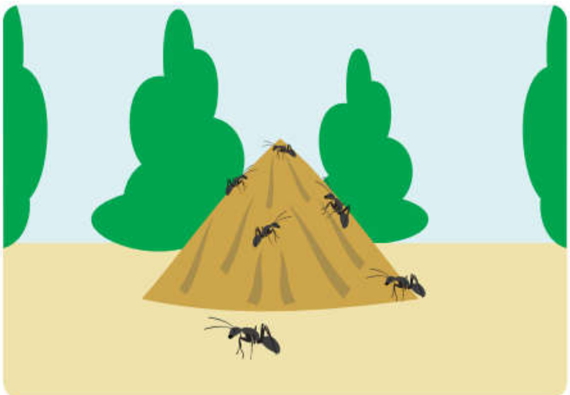
Concept (2): Using the Place Value

Circle the symbol to compare the numbers

1,231,425,234	> = <	1,321,454,435
67,353,622	> = <	67,353,630
40,243,021	> = <	40,209,314
999,999,999	> = <	1,000,000,000

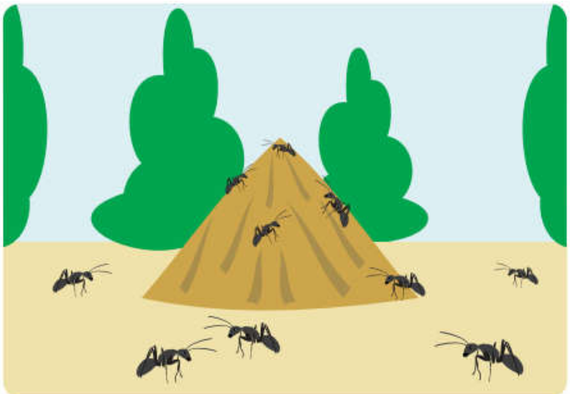
Comparing Anthills Highlight or circle the digits that are the same in both numbers.

Anthill 1



4,356

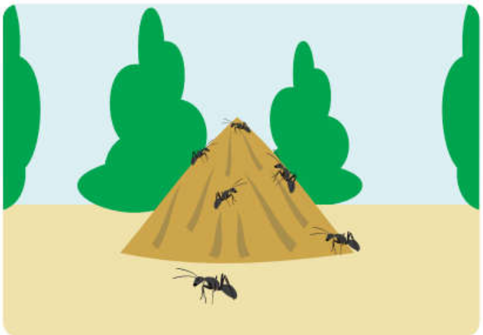
Anthill 2



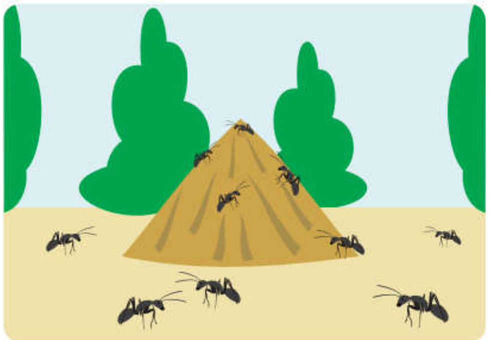
4,502



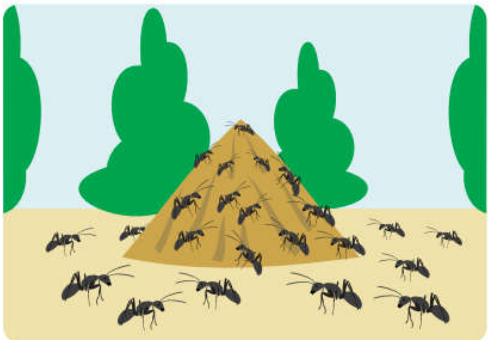
Complete using (<) , (>) or (=):



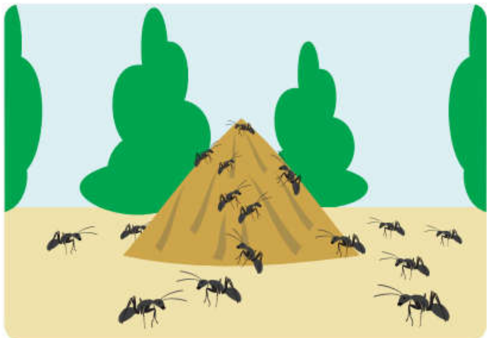
123,568



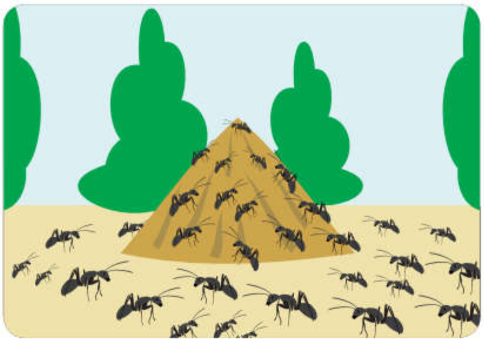
123,978



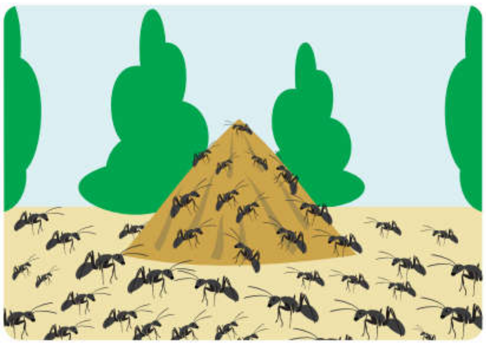
6,235,678



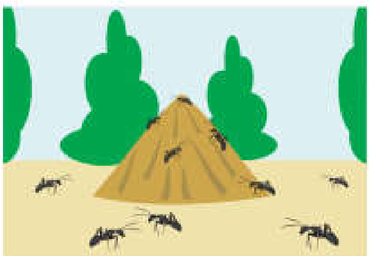
6,235,508



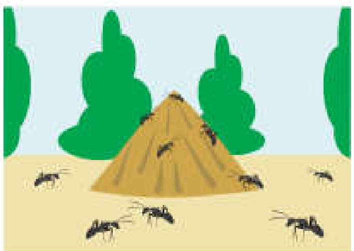
2,450,890,007



2,500,000,000



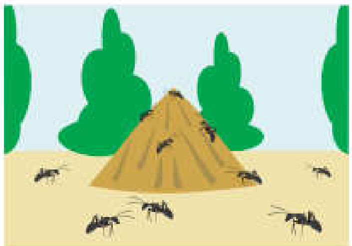
40,000 + 3,000 + 100 + 10



40,000 + 3,000 + 100 + 20



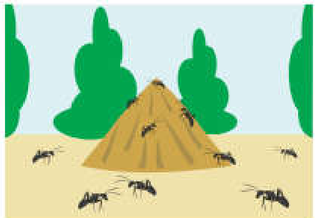
five milliard, two hundred twenty million, five hundred-six thousand, forty



five milliard, two hundred twenty million, five hundred forty thousand, six



one million, nine hundred seventy-six thousand, eight hundred eighty-eight



1,000,000 + 900,000 + 70,000 + 6,000 + 800 + 80 + 8

Complete:

(1) The smallest 7-digit number is ....

(2) The smallest 9-digit number is ....

(3) The smallest different 8-digit number is ....

(4) The smallest different 10-digit number is ....

(5) The greatest 6-digit number is ....

(6) The greatest 12-digit number is ....

(7) The greatest different 7-digit number is ....

(8) The greatest different 8-digit number is ....

Complete using (<) , (>) or (=):

14,780,064		14,790,064
5,13,492,500		Five milliard, three hundred million, seven hundred fifteen thousand, forty-three
(7×100,000,000) + (4×10,000,000) + (9×10,000) + (8×10) + (1×10)		70,000 + 9,000 + 600 + 40 + 3
Seventeen million, four hundred twenty-five thousand, six hundred five.		(1×10,000,000) + (7×1,000,000) + (4×100,000) + (2×10,000) + (6×100) + (5×1)
8,040,761,903		8,000,000,000 + 400,000,000 + 700,000 + 60,000 + 1,000 + 900 + 3
Four hundred twenty-three thousand, twelve		400,000 + 30,000 + 20,000 + 20 +1

1. List Omar's data in ascending order:

78,090 79,010 78,091 79,100 78,999

________; ________; ________; ________; ________

2. List Mariam's data in descending order. You may use word or standard form.

- three milliard, ten million, one thousand, thirty-four
- three milliard, one million, three hundred twenty-three thousand, three hundred ninety-one
- three milliard, nine hundred ninety thousand, nine hundred ninety-two
- three milliard, one hundred ten million, ninety-nine thousand, four hundred ninety-three

3. List the numbers in ascending order. Use the form in which they are given.

- four milliard, six hundred thousand, four
- 461,014
- four milliard six hundred thousand forty
- (4 x 1,000,000,000) + (4 x 100,000) + (6 x 10)
- 6,400,042

4. List the following in ascending order. Use standard form.

- (6 x 100,000) + (5 x 10,000) + (4 x 1,000) + (3 x 100) + (1 x 1)
- six hundred fifty-four thousand, three hundred ten
- 604,320
- (6 x 100,000) + (5 x 10,000) + (4 x 1,000) + (3 x 100) + (1 x 10) + (1 x 1)
- five hundred ninety-nine thousand, three hundred ten

5. List the numbers in descending order. Use standard form.

- 5,000,000,000 + 40,000,000 + 5,000,000 + 7,000 + 90
- (6 x 1,000,000,000) + (3 x 10,000,000) + (5 x 1,000,000) + (6 x 10,000) + (9 x 100)
- five milliard, forty-one million, seven thousand, ninety
- 6,000,000,000 + 40,000,000 + 5,000,000 + 10,000 + 7,000 + 90
- 6,025,060,990

Predicting the Unpredictable

Use front-end estimation for each number in the table. Record your answer in standard form:

	Number	Front-End Estimation
1	78,920,416	
2	8,723	
3	Nine milliard, four hundred twelve million, seventy-six thousand, five	
4	Four hundred thousand, seven hundred ninety-five	
5	9,000,000,000 + 800,000,000 + 70,000,000 + 5,000 + 60 + 5	
6	60,000,000 + 7,000,000 + 400,000 + 20,000 + 1,000 + 900 + 80 + 4	
7	(8 x 10,000) + (6 x 1,000) + (5 x 100) + (2 x 10) + (9 x 1)	

Circle the correct answer:

	Number	Front-End Estimate Choices
8	19,780,506	9,000,000 OR 10,000,000
9	Eight hundred twenty five thousand, six hundred nineteen	800,000 OR 8,000,000
10	2,567,814,900	Two milliard OR 2,000,000

Rounding

Rounding means replacing the exact number by another simpler number, near to the exact number.

[1] Round each of the following to the nearest 1000:

126,237	≅	36,873	≅ ....
33,500	≅	19,254	≅ ....
821,799	≅	49,500	≅ ....
2,231,274	≅	233,695	≅ ....

[2] Round each of the following to the nearest 10,000:

15,000	≅	52,600	≅ ....
78,000	≅	92,000	≅ ....
456,450	≅	69,224	≅ ....
45,274	≅	88,695	≅ ....

[3] Round each of the following to the nearest 100,000:

250,000	≅	275,600	≅ ....
878,000	≅	990,000	≅ ....
456,450	≅	469,224	≅ ....
645,274	≅	988,695	≅ ....

[4] Round each of the following to the nearest 1,000,000:

3,250,000	≅ ………………………	23,275,600	≅ ………………………
7,878,000	≅ ………………………	4,990,000	≅ ………………………
10,456,450	≅ ………………………	45,469,224	≅ ………………………
65,645,274	≅ ………………………	123,988,695	≅ ………………………

[5] Round each of the following to the nearest 1,000,000,000:

2,323,250,000	≅ ………………………	6,223,275,600	≅ ………………………
8,247,878,000	≅ ………………………	7,504,990,000	≅ ………………………
4,010,456,450	≅ ………………………	6,045,469,224	≅ ………………………
5,665,645,274	≅ ………………………	2,123,988,695	≅ ………………………

[8] Choose the correct answer:

a) 17085 ≅ 17000 to the nearest…… (10 , 100 , 1000)

b) 8453 ≅ 8500 to the nearest…… (10 , 100 , 1000)

c) 75643.1 ≅ 75600 to the nearest…… (10 , 100 , 1000)

d) 3725.6 ≅ 3730 to the nearest…… (10 , 100 , 1000)





PRACTICE

Follow the directions in each problem to round each number to the given place. Use the midpoint strategy or the Rounding Rule strategy.

1. A plane's altitude increased by 2,721 meters. Round this number to the nearest Thousand.

2. A runner ran 1,537 meters but describes the distance he ran with a rounded number. Round 1,537 to the nearest Hundred.

3. A record number of 23,386 ants live in colony A. Round this number to the nearest Ten Thousand.

Try This! Round to the place value of the underlined digit.

A 64,999 ____________

B 850,000 ____________

C 301,587 ____________

D 10,832 ____________

Round to the place value of the underlined digit.

2. 934,567 ____________
3. 641,267 ____________
4. 234,890 ____________
5. 347,456 ____________
6. 562,408 ____________
7. 284,792 ____________
8. 199,814 ____________
9. 923,718 ____________

12. THINK SMARTER About 300,000 people attended a festival. For numbers 12a–12e, choose Yes or No to show whether each number could be the exact number of people that attended the festival.

12a.	351,213	○ Yes	○ No
12b.	249,899	○ Yes	○ No
12c.	252,348	○ Yes	○ No
12d.	389,001	○ Yes	○ No
12e.	305,992	○ Yes	○ No

Homework

Create a number in the Hundred Thousands that is less than (<) 893,824.

Create a number in the Ten Millions that is greater than (>) 34,450,600,125.

Create a number in the Milliards that is greater than (>) 3,456,789,000.

Round the numbers below to the Thousands place.

1. 9,621 ≈

2. 42,502 ≈

3. 3824,157 ≈

Round the numbers below to the Hundreds place.

4. 410,671 ≈

5. 423,502 ≈

6. 1,632,542 ≈

Rewrite the numerals that follow in standard form. Then, list the numerals in descending order (greatest to least).

six hundred forty-three thousand, nine hundred nineteen

634,920

(6 × 100,000) + (4 × 10,000) + (3 × 1,000) + (9 × 100) + (2 × 10)

600,000 + 40,000 + 4,000 + 10

six hundred thirty-four thousand, two hundred ninety-nine

Standard Form	Descending Order

Use front-end estimation for the following numbers:

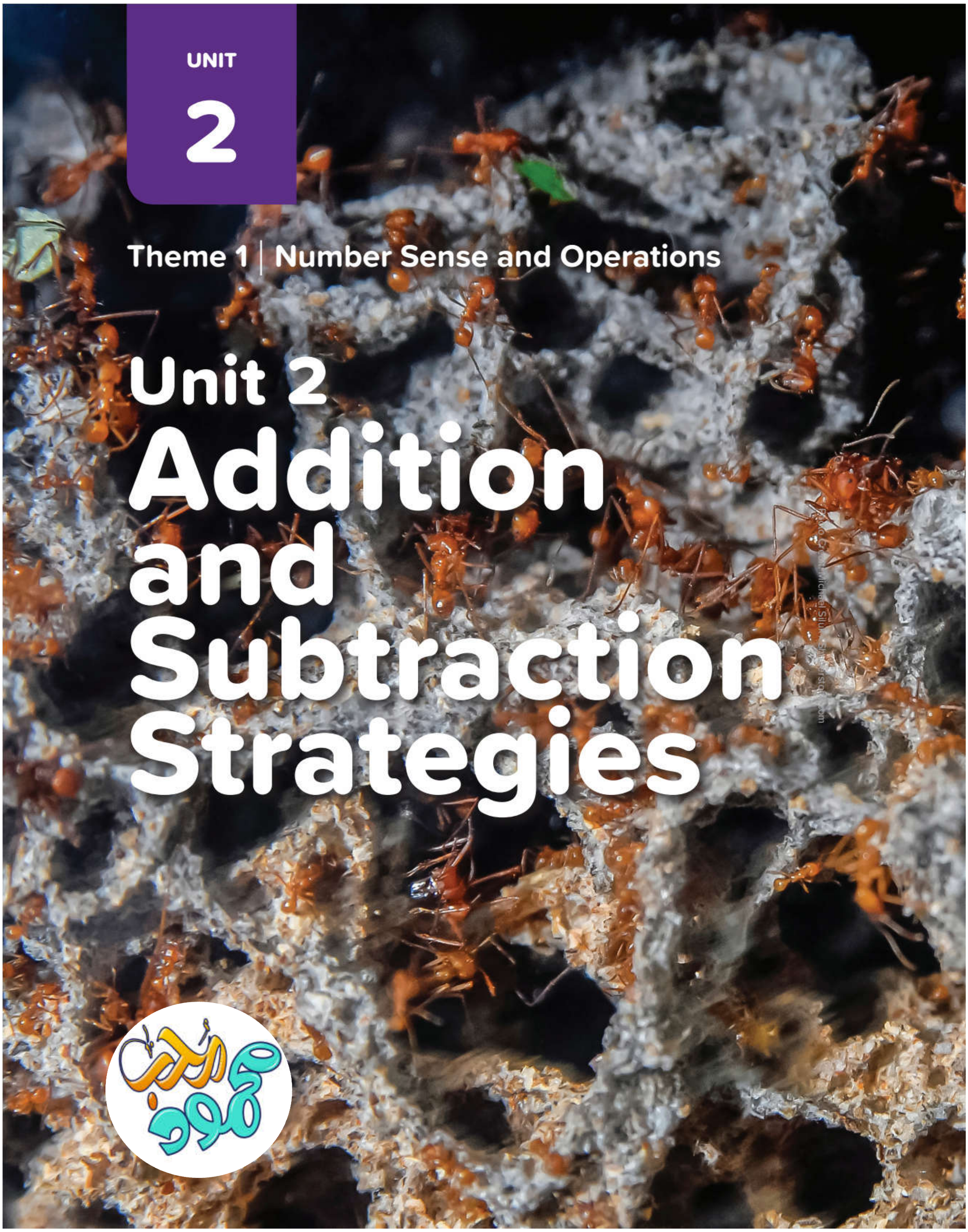
2. 86,433,920

3. 6,627,513,202

4. One hundred sixty-three million, four hundred thirty thousand, eight hundred two






UNIT
2
Theme 1 | Number Sense and Operations
Unit 2
Addition and Subtraction Strategies

Concept (1)
Using Addition & Subtraction Strategies

Additive Identity Property Solve the following problems.

2,345 + 0 __________	0 + 12,567,109 __________

Commutative Property Solve the following problems.

5 + 7 + 8 + 3 __________	8 + 7 + 3 + 5 __________	7 + 5 + 8 + 3 __________	3 + 7 + 8 + 5 __________

Associative Property Solve the following problems. Remember to solve what is in the parentheses first.

(10 + 4) + 20 + 17 __________	10 + (4 + 20) + 17 __________	10 + 4 + (20 + 17) __________

1. Select the *best* answer to correctly complete the statement.

Additive Identity	Associative	Commutative

4 + 6 = 6 + 4 is true because of the ______________________________ Property of Addition.

2. Which of these statements is true regarding the sum of 16 + 0?

   A. 16 + 0 = 16 because any number added to 0 will equal that number.

   B. 16 + 0 = 0 because any number added to 0 will equal zero.

   C. 16 + 0 = 1 + 6 because the addends can be grouped in any way.

   D. 16 + 0 = 6 + 1 because the addends can be combined in any order.

3. Jabari writes 12 − (8 + 1) = (12 − 8) + 1. Is the statement true?

   A. Yes, because the Associative Property applies to subtraction.

   B. Yes, because the Commutative Property applies to subtraction.

   C. No, because the Associative Property does not apply to subtraction.

   D. No, because the Commutative Property does not apply to subtraction.

Mental Math Strategies

1. 304 + 399 = 703

   Student explanation: I used **Compensate to Make a Benchmark**. I thought of 399 as 400. 304 + 400 is 704 but I added one too many, so I took one away to get the sum. 704 – 1 = 703.

2. 785 – 770 = 15

   Student explanation: I used **Add to Subtract**. I counted up from 770 to get to 785.

3. 489 + 134 = 623

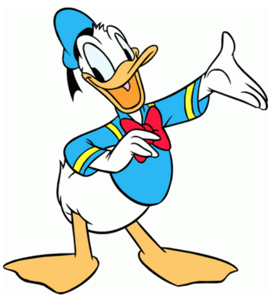
   Student explanation: I use **Break Up and Bridge**. I added 400 + 100 to get 500. I added 80 + 30 to get 110, so already I know 500 + 110 is 610. Then I added 9 + 4 to get 13, so 610 + 13 = 623.

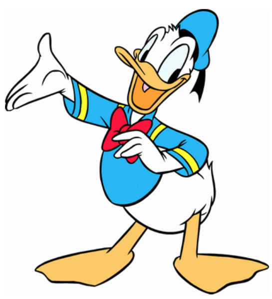
4. 74 – 19 = 55

   Student explanation: I used **Compensate to Make a Benchmark**. I thought of 19 as 20. 74 – 20 = 54 but I took off one too many, so I needed to add one back. 54 + 1= 55.

5. 156 – 47 = 109

   Student explanation: I used **Break Up and Bridge**. I broke up 47 into 40 and 7. I took 40 away from 156 and got 116. Then I took away 7 more and found the difference was 109.





BUILD

Solving with Mental Math Strategies Use the chart that follows to help you practice the strategies as you solve the problems mentally. Try each strategy at least one time.

Front-End Estimation	Add or subtract only the largest place values in each number to produce an estimate (that may not be close to the actual answer). For example, in the problem 167 – 83, you can think 100 – 80 = 20.
Rounding	Select one place value for each number. Determine which multiple of 10, 100, 1,000 (and so on) it is closest to and then add or subtract for a more accurate estimate. For example, in the problem 167 – 83, you can think 170 – 80 = 90 (a far more accurate estimate).
Compensate to Make a Benchmark Number	Regroup the numbers in a problem to create numbers that are easier to add or subtract mentally. For example, with 59 + 22, you can think "60 + 22 is 82 but I added one too many so the sum will be 1 less, or 81." Or for subtraction, with 17 – 9, you can think "17 – 10 is 7, but I subtracted 1 too many, so the difference is one more, or 8."
Break Up and Bridge	Break up the number being added or subtracted into numbers that are easier to add or subtract mentally (expanded form can help). For example, with 92 – 26, you can think "92 – 20 is 72 and then take 6 more away is 66," or for 537 + 208, you can think, "537 and 200 is 737, and 737 plus 8 is 745."
Add to Subtract	Count up from the subtrahend to the minuend. For example, with 92 – 67, you can think "67 + 3 = 70; 70 + 20 = 90; 90 + 2 = 92. 3 + 20 + 2 = 25, 92 – 67 = 25."



Match which mental math strategy would work best for each problem. There may be more than one best answer.

Compensate to Make a Benchmark	Break Up and Bridge	Add to Subtract

1. 169 + 32

2. 802 – 789

3. 64 + 89

4. 44 – 23

Find the sum.

$$\begin{array}{r} 546 \\ +\ 215 \\ \hline \end{array}$$

A. 331

B. 751

C. 756

D. 761

Find the difference.

$$\begin{array}{r} 423 \\ -\ 118 \\ \hline \end{array}$$

A. 305

B. 306

C. 315

D. 341



Homework

Select the *best* answer to complete each statement.

Additive Identity	**Associative**	**Commutative**

Jamal wrote (14 + 6) + 21 = 14 + (6 + 21) using the

______________________ Property of Addition.

He wrote 33 + 16 = 16 + 33 using the ______________________

Property of Addition. He wrote 28 + 0 = 28 using the

______________________ Property of Addition.

A student writes the statement 87 − 52 = 52 − 87. Why is this statement incorrect?

A. The Associative Property applies to addition but not subtraction.

B. The Commutative Property applies to addition but not subtraction.

C. The Associative Property applies to subtraction but not addition.

D. The Commutative Property applies to subtraction but not addition.



Obaid found that 29,828 + 41,309 = 71,137. Which estimate could he use to check if his answer is reasonable?

A. 30,000 + 50,000 = 80,000

B. 20,000 + 50,000 = 70,000

C. 30,000 + 40,000 = 70,000

D. 20,000 + 40,000 = 60,000

Problem	Mental Math Strategy Chosen	Solution	Was this an effective strategy? Why or why not?
17 + 29			
92 – 11			
101 – 98			
32 + 11			
76 – 68			
83 + 17			





Adding with Regrouping

Find the result:

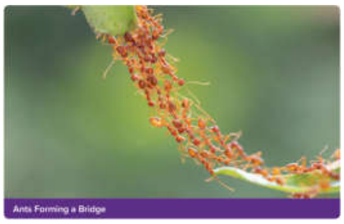
a 3 7 8 5 4 2 1 + 2 1 0 2 3 4	b 4 8 9 1 2 4 3 + 3 1 0 2 3 1 5	c 6 5 8 8 7 6 + 6 7 3 4 5 3 8
d 6 5 4 3 0 0 0 - 4 2 4 2 7 8 8	e 7 0 0 8 1 9 8 - 8 1 9 4 8 5	f 8 0 0 0 0 0 0 - 3 5 1 4 6 7 9

Estimate and Solve Work with your partner to estimate the sums and then solve the problems.

1. 579 →
   + 62 → +

2. 8,049 →
   + 6,199 → +

A colony of ants is on a march through the jungle looking for food. On this march they made 2 bridges. The first bridge is composed of 142 ants. The second bridge is composed of 165 ants. How many ants were needed for both bridges? Show your work. Then, explain how you know your answer is reasonable.



Ants Forming a Bridge

Estimate | **Exact**

Abeer and Ehab are traveling from Aswan to Alexandria. They will travel 514 km on the first day to Asyut. They will travel 597 km from Asyut to Alexandria on the second day. How many kilometers will they travel in all?

A Saharan Silver ant is the fastest ant on the planet. It can move about 855 mm a second. If this ant could maintain this speed for 2 seconds, how far would it go?

	Species	Total	Round Each Number to the Nearest Thousand
1.	Black Garden Ants	58,712	
2.	Pavement Ants	81,475	
3.	Pharaoh Ants	42,358	

4. How many ants would you have if you combined the Pharaoh Ants and the Pavement Ants? Use your rounded numbers from the table to estimate, and then find the exact answer.

5. What is the total amount of ants? Use your rounded numbers from the table to estimate, and then find the exact answer.

Subtraction Strategies

Counting Back with Decomposition	**Draw an open number line and write the minuend at the right end of the line. Decompose the subtrahend into expanded form. Count back from the minuend using the expanded form of the subtrahend.** For example, with 312 – 116, you can write 312 at the right end of a number line, and then break 116 into 100 + 10 + 6. Count back on the number line using the expanded form: 312 – **100** = 212; 212 – **10** = 202; 202 – **6** = 196. So, 312 – 116 = 196.
Counting Up with Decomposition	**Draw an open number line and write the subtrahend at the left end of the line. Decompose the minuend into friendly numbers or using expanded form. Count up from the subtrahend to the minuend, recording the jumps and the new sums. Add the jumps together to find the difference.** For example, with 312 – 116, you can write 116 at the left end of a number line, and then make "friendly" jumps to get to 312: 116 + **100** = 216; 216 + **4** = 220; 220 + **80** = 300; 300 + **12** = 312. 100 + 4 + 80 + 12 = 196. So, 312 – 116 = 196.

	Problem	Mental Math Strategy Chosen	Solution	Was this an effective strategy? Why or why not?
1	340 – 204			
2	2,402 – 104			
3	789 – 329			
4	67 – 18			

Subtraction with regrouping

A trap jaw ant wanted to cross a river that was 3,548 cm across. The ant had already swum 1,672 cm. How much farther does the ant have to go?







Two colonies of fire ants were stuck in a flood and made floating rafts to survive. The first colony had approximately 1,267 ants and the second had 3,452 ants. How many more ants were in the second colony?



A fire ant colony 255,000 ants. A *Gigantiops destructor* ant colony has 6,200. What is the difference between the size of the two colonies?

Homework

Using 10s Follow your teacher's directions to mentally solve the problems.

1. 3 + 7
2. 3 + 5 + 7
3. 7 + 6 + 3

4. 9 + 1
5. 1 + 7 + 9
6. 9 + 6 + 1

7. 7 + 7 + 3 + 3
8. 9 + 9 + 1 + 1

It takes 15,422,140 ants to move a log that weighs 77 kg. It takes approximately 6,350,300 ants to move a rock that weighs 32 kg. How many more ants does it take to move the log than the rock?

Use the subtraction algorithm to solve the problems. Then, round each number to the nearest Thousand to check the reasonableness of your answers.

1. 6,625
   – 4,417

2. 23,640
   –14,635

3. 25,884
   – 18,875

4. 1,816
   – 1,066

Concept (2): Solving Multistep Problems

Bar Models, Variables, and story problems

There are 5,328 ants in the colony. In the colony, 2,164 ants are females and the rest are males. How many male ants are in the colony?

Bar Model:

Equation	Solution

There are 20,000 ants in the colony. In the colony, 12,000 are females and the rest are males. How many male ants are in the colony?

Bar Model:

Equation	Solution

In colony A there are 1,200 ants. Some ants are out foraging for food and supplies, and 700 ants are taking out the colony's trash. How many ants are foraging for food and supplies?

Bar Model:

Equation	Solution

There are 12,000 species of ants. Of these 12,000 species, 2,500 species live in Africa and the rest live in other parts of the world. How many species do not live in Africa?

Bar Model:

Equation	Solution

$14{,}000 - n = 6{,}000$

Bar Model:

Solution

$b - 53{,}500 = 75{,}200$

Bar Model:

Solution

$725{,}625 + c = 935{,}075$

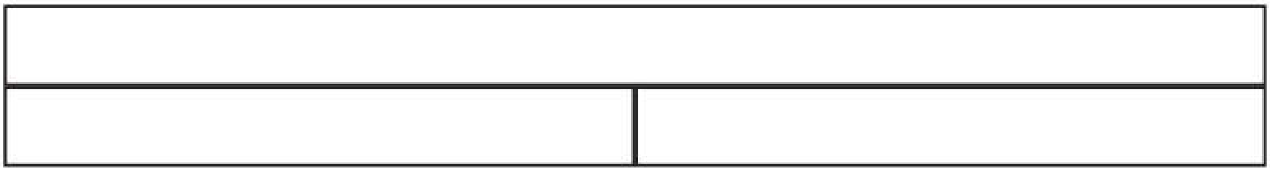
Bar Model:

Solution



13,280 – *d* = 5,420

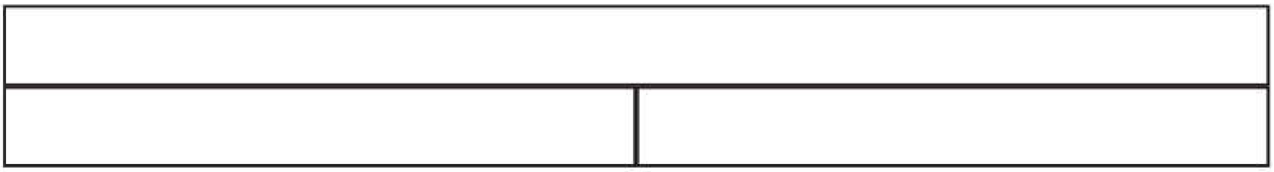
Bar Model:



Solution:

e + 205,925 = 810,775

Bar Model:



Solution:

Omar found a website created to study ant colonies. He saw that there were 1,025 ants in Colony A on Wednesday. On Friday, 101 ants leave the colony. How many ants are left in Colony A?



Mariam found the same website and saw that there were 1,555 ants in Colony B. How many more ants are in Colony B than in Colony A?

The Great Pyramid had 59,000 visitors in January, 27,525 visitors in February, and 32,975 visitors in March. They expect to have 150,000 visitors by the end of April. How many visitors need to show up in April to reach this count?

New Valley has a population of 256,088. If Matrouh has a population of 429,999 and South Sinai has a population of 108,951, how many more people do Matrouh and South Sinai have combined than New Valley?

The Nile River is approximately 6,650 kilometers long. Kareem and his family travel the Nile River from one end to the other end. If they travel 1,075 kilometers in January, then 1,120 kilometers in February, and then 1,325 kilometers in March, how many more kilometers do they still need to travel to reach the other end?

Aswan has a population of 1,575,914. If Luxor has a population of 1,333,309 and Red Sea has a population of 383,796, how many more people do Luxor and Red Sea have combined than Aswan?

Hazem and Menna are monitoring ant colonies on the website. Hazem has been monitoring an ant colony with 132,890 ants. Menna has been monitoring an ant colony with 57,024 ants and another colony with 72,999 ants. Who has been monitoring more ants? How many more?

Homework

A coffee pot held 1,425 milliliters of coffee. Rashida filled her mug with 730 milliliters of coffee from the pot. Then she poured 460 milliliters for her friend. How can you find out how much coffee was left in the pot? Select *two* correct answers.

A. Add the 730 milliliters Rashida poured in her mug to the 1,425 total milliliters that were in the coffee pot to begin with. Then subtract the 460 milliliters Rashida poured in her friend's mug.

B. Subtract the 730 milliliters Rashida poured in her mug from the 1,425 milliliters that were in the coffee pot to begin with. Then subtract the 460 milliliters Rashida poured in her friend's mug.

C. Add the 460 milliliters Rashida poured in her friend's mug to the 1,425 total milliliters that were in the coffee pot to begin with. Then subtract the 730 milliliters Rashida poured in her mug.

D. Subtract the 460 milliliters Rashida poured in her friend's mug from the 1,425 total milliliters that were in the coffee pot to begin with. Then subtract the 730 milliliters Rashida poured in her mug.

E. Add the 730 milliliters Rashida poured in her mug to the 1,425 total milliliters that were in the coffee pot to begin with. Then add the 460 milliliters Rashida poured in her friend's mug.

F. Add the 460 milliliters Rashida poured in her friend's mug to the 1,425 total milliliters that were in the coffee pot to begin with. Then add the 730 milliliters Rashida poured in her mug.

What is the value of x? $111 + x = 481$

A. 260

B. 370

C. 471

D. 592

A ship entered port with 611 tonnes of cargo. It picked up a 25-tonne shipment of fresh fruit and a 149-tonne shipment of electronics before it left port. How much cargo did the ship leave port with?

A. 437 tonnes

B. 636 tonnes

C. 760 tonnes

D. 785 tonnes

A water truck was filled with 4,000 liters of water. It delivered 1,250 liters to its first client. It delivered 620 liters to its second client. It delivered 2,120 liters to its last client. How much water was left in the truck?

A. 10 liters

B. 50 liters

C. 2,130 liters

D. 7,990 liters

A seamstress had a 21-meter bolt of cloth. She used some of the cloth to make a dress and had 15 meters left over. Let *c* represent the amount of cloth. Which equation represents this problem?

A. $15 - c = 21$

B. $21 - c = 15$

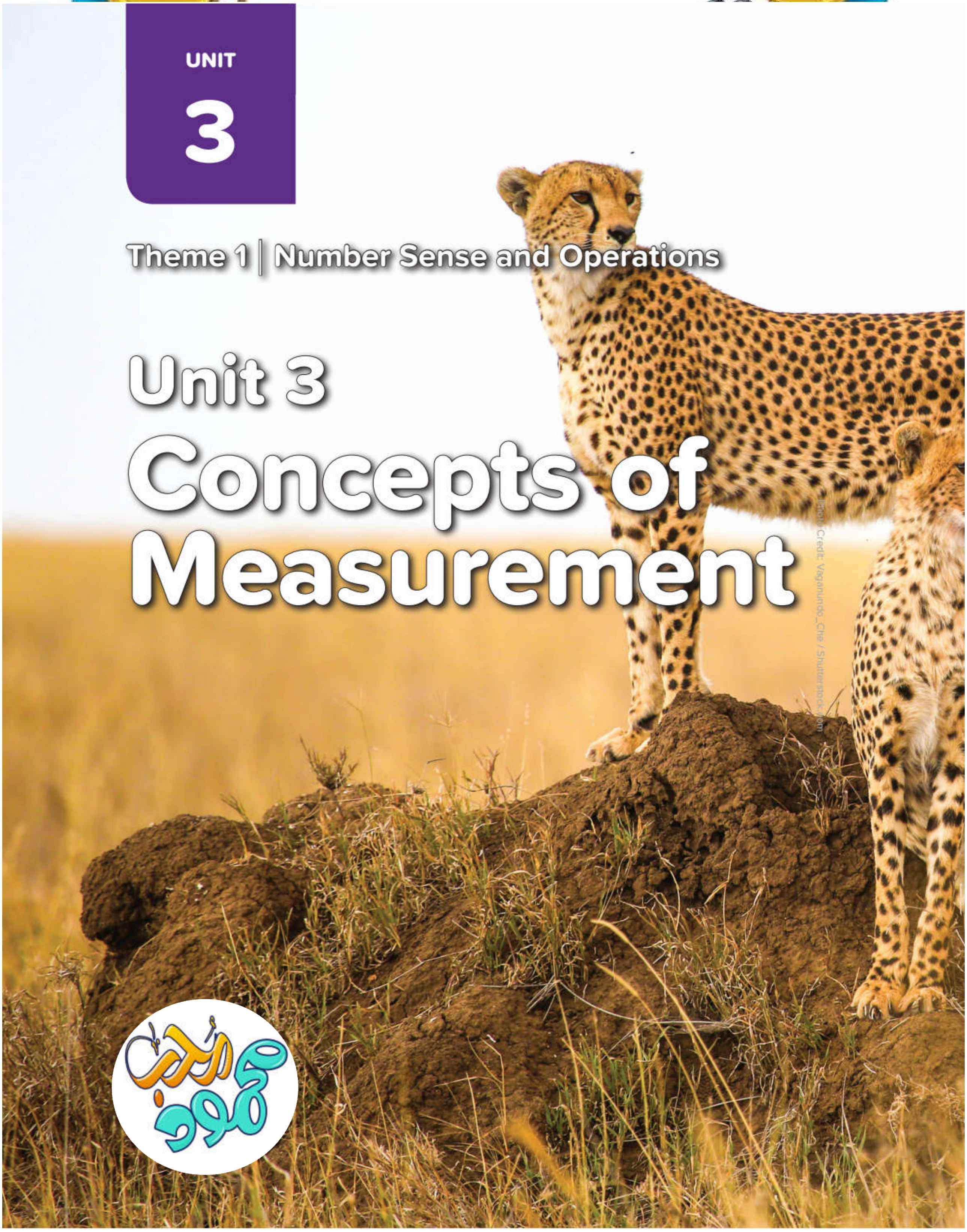
C. $15 + c = 21$

D. $21 + c = 15$









UNIT
3

Theme 1 | Number Sense and Operations

Unit 3
Concepts of Measurement

Concept (1): Metric Measurements

Measurement Review Circle the best unit to measure each length.

1. Height of a student

   Kilometer Meter Centimeter Millimeter

2. Distance between home and school

   Kilometer Meter Centimeter Millimeter

3. Length of the Nile River

   Kilometer Meter Centimeter Millimeter

4. Length of an ant

   Kilometer Meter Centimeter Millimeter

5. Distance from Cairo to Alexandria

   Kilometer Meter Centimeter Millimeter

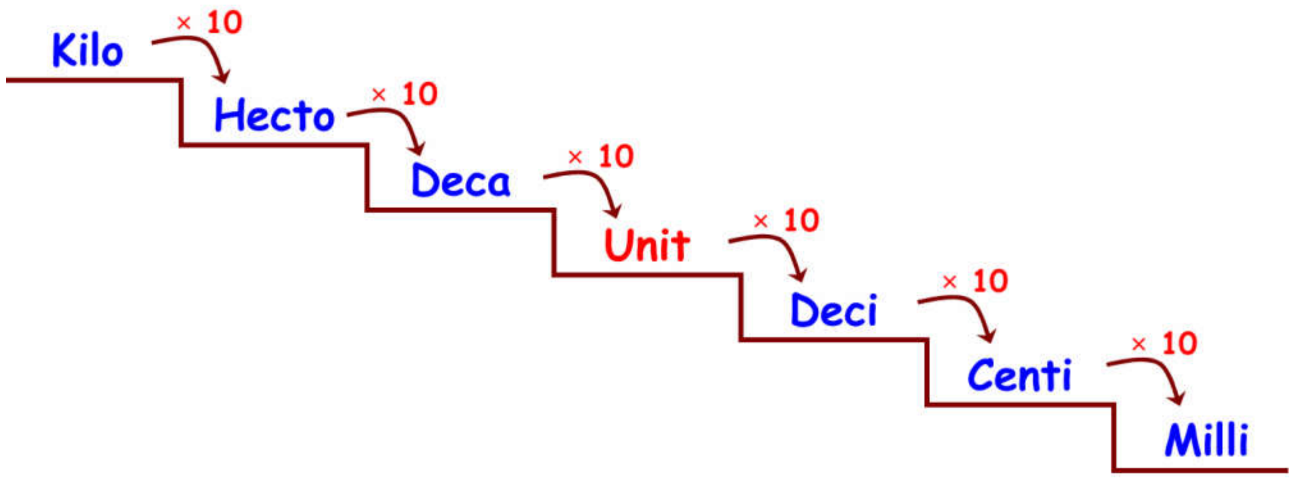
Fill in the blanks to answer the following questions. Think of things that could be measured in each unit.

6. ______________________ is best measured in kilometers

   because ______________________.

Metric Units View and discuss the Metric Conversion chart with your Shoulder Partner.

Kilo-	Hecto-	Deca-	Unit	Deci-	Centi-	Milli-
1,000 units	100 units	10 units	1 unit	1/10 unit	1/100 unit	1/1,000 unit



	Kilometer	Meter
1		1,000
2	3	
3		40,000

	Meter	Centimeter
4	1	
5		300
6	10	

Look at the following example:

140 cm

1 m	40 cm

Convert the following lengths into the given units in the bar models. Use the previous example to help you.

230 cm

7	_______ m	_______ cm

478 cm

8	_______ m	_______ cm

_______ cm

9	5 m	91 cm

Convert the following.

1. 4 m 18 cm = ______________ cm

2. 18 m 14 cm = ______________ cm

3. 8 km 14 m = ______________ m

4. 27 km 55 m = ______________ cm

5. If one black ant can walk 250 meters in 1 hour, how many hours will it take to walk 1 kilometer?

6. If the same black ant walked for 10 hours, how far would it go? Express your answer in kilometers and meters.

Work with a partner to complete the conversions. Use the previous example to help you.

1. 3 kg = ________ g

2. 8 kg = ________ g

3. ________ kg = 5,000 g

4. 4 kg = ________ g

5. ________ kg = 30,000 g

6. 4,590 g

______ kg	______ g

7. 8,400 g

______ kg	______ g

8. ______ g

7 kg	414 g

9. A colony of black ants is estimated to weigh 3,493 grams. Rewrite that number using kilograms and grams.

A different ant colony is estimated to weigh 14 kilograms and 89 grams. Rewrite that weight in grams.

PRACTICE

1. Convert:

   2,456 g = ________ kg ________ g

2. Convert:

   5,235 g = ________ kg ________ g

3. Convert:

   7,324 g = ________ kg ________ g

4. Convert:

   4,535 g = ________ kg ________ g

1. 6 L = ________ mL
2. 9 L = ________ mL
3. ________ L = 6,000 mL
4. 3 L = ________ mL
5. ________ L = 10,000 mL

9,425 mL

________ L	________ mL

6,360 mL

_______ L	_______ mL

_______ mL

8 L	910 mL

A car is filled with 45 liters of petrol. How many milliliters would that be?

A family drank 1 liter 500 milliliters of orange juice at breakfast. If there were 3 liters of orange juice before breakfast, how much orange juice is left?

A car was filled with 20 liters 500 milliliters of petrol. At the end of the day, there were 15 liters 250 milliliters left in the tank. How much petrol was used?

10. Use the recipe that follows to answer the questions.

Sobia Ingredients:

- 100 g raw short grain rice
- 500 mL of water
- 750 mL cold milk
- 100 g caster sugar
- 5 mL vanilla
- 500 mL coconut milk

Which ingredients are measured by mass?

Which ingredients are measured by capacity?

What is the total amount of liquid ingredients in the drink in milliliters? In liters?

Doha's fish tank contains 5 liters 245 milliliters of water. If the tank can hold 10 liters of water, how much more water does she need to fill the tank?

Kilo-	Hecto-	Deca-	Unit	Deci-	Centi-	Milli-
1,000 units	*100 units*	*10 units*	*1 unit*	*1/10 unit*	*1/100 unit*	*1/1,000 unit*
Kilometer (km)	Hectometer (hm)	Decameter (dam)	Meter (m)	Decimeter (dm)	Centimeter (cm)	Millimeter (mm)
			Gram			
			Liter			

Which sentence *best* explains the relationship between a meter and a centimeter?

A. A meter is equal to 100 centimeters.

B. A meter is equal to 10 centimeters.

C. A centimeter is equal to 100 meters.

D. A centimeter is equal to 10 meters.

Kilometers	Meters	Centimeters
4	?	?

Which *two* answer choices *best* complete the table?

A. 40

B. 400

C. 4,000

D. 40,000

E. 400,000

A company sells laundry soap to businesses in containers of the following sizes.

Container A: 3,000 liters

Container B: 3,000 milliliters

Container C: 300 liters

Which list shows the containers from least to greatest capacity?

A. Container A, Container B, Container C

B. Container A, Container C, Container B

C. Container C, Container B, Container A

D. Container B, Container C, Container A

1. An ant traveled 8 meters from its nest to forage for food. How far is this in centimeters?

Equation: ____________________

A colony of army ants has been known to consume 2 kilograms of food in a month. How many grams of food are consumed by the colony?

Equation: ____________________

17. THINKSMARTER Select the correct word to complete the sentence.

Justine is thirsty after running two miles.

She should drink [1 liter / 1 meter / 100 millimeters] of water.

Homework

Convert to centimeters:

1. 6 m =

2. 20 m 10 cm =

Convert to meters:

3. 23 km =

4. 800 km 50 m =

5. A worker ant walked 3,500 meters on Monday to look for food and 2,450 meters on Tuesday to look for food. How far did the ant travel on Monday and Tuesday combined? Express your answer in meters, and then convert to a combination of kilometers and meters.

Convert each of the following.

1. 3,806 g = ____________ kg ____________ g

2. 8 kg 50 g = ____________ g

3. 3,425 g = ____________ kg ____________ g

4. 1 kg 10 g = ____________ g

5. 10,452 g = ____________ kg ____________ g

Express the answers in milliliters.

1. 21 L + 2 L 800 mL =

2. 4 L 485 mL – 323 mL =

Convert.

3. 11 L 342 mL = ____________ mL

4. 16,783 mL = ____________ L ____________ mL

Concept (2): Time and Scaled Measurement

Table 1	
Hours	Minutes
1	60
2	
3	
4	
5	
6	
7	
8	
9	
10	

Table 2	
Hours	Minutes
1	60
2	
3	
4	
5	
6	
7	
8	
9	
10	

Table 3	
Days	Hours
1	24
2	
3	
4	
5	
6	
7	
8	
9	
10	

Table 4	
Weeks	Days
1	7
2	
3	
4	
5	
6	
7	
8	
9	
10	

Solve the conversion problems using the ratio tables above.

5. 10 hours 30 minutes = __________ minutes
6. 6 minutes 15 seconds = __________ seconds
7. 4 days 20 hours = __________ hours

PRACTICE

Write the digital time that is shown on each analog clock.

1.



____

2.



____

3.



____

Solving Elapsed Time Problems Solve the problems and write the new time. Based on the examples shown to you by your teacher, try a few different strategies to solve the problems. Show your work.

1. 3:25 + 1:26 = ________

2. 3:25 + 45 minutes = ________

3. 5:43 – 1:25 minutes = ________

4. Jana and Maha have 5 hours to watch three movies that last 1 hour and 22 minutes; 2 hours and 12 minutes; and 1 hour and 57 minutes.

   Do the girls have enough time to watch all three movies? How do you know?

   The girls decide to just watch the two shortest movies. If they start watching them at 5:30 p.m., what time will their movies end?

5. A worker ant went out to find food for the colony. It left at 6:30 a.m. and returned at 7:42 a.m. How long was that ant looking for food?

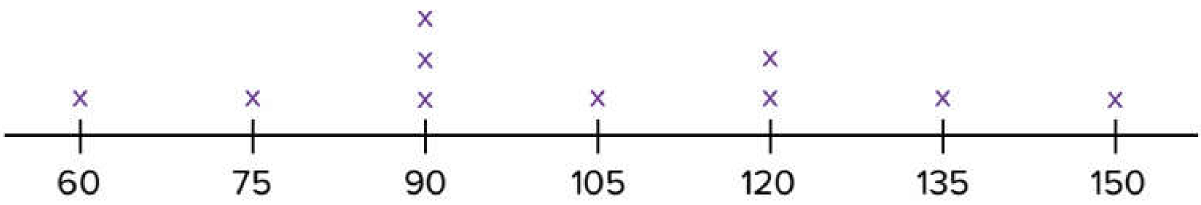
Fun with Facts Match the Fact Family with the number that belongs in the blank.

1. 6, 48, ________ a. 45
2. 8, 72, ________ b. 11
3. 9, 5, ________ c. 8
4. 44, 4, ________ d. 9

Use the following line plot to answer the following questions.

Number of Minutes Studied

X = 2 students



Minutes

1. What is being measured?

2. What is the scale for the number line?

For Problems 3–5, record your answer in total minutes and then convert your answer to hours and minutes.

3. What was the least amount of time spent studying?

4. What was the most amount of time spent studying?

5. What was the most common amount of time spent studying?

Choose the correct Answer:

(1) 9 km = ………… m (9 , 90 , 900 , 9,000)

(2) 3 km = ………… decameter (3 , 30 , 300 , 3,000)

(3) 2 hectometers = ………… m (2 , 20 , 200 , 2,000)

(4) 40,000 mm = …… m (4 , 40 , 400 , 4,000)

(5) 7 decagrams = …… gm (7 , 70 , 700 , 7,000)

(6) 6 kg = …… decagrams (6 , 60 , 600 , 6,000)

(7) 8 kg = …… hectograms (8 , 80 , 800 , 8,000)

(8) 9 Liters = …… ml (9 , 90 , 900 , 9,000)

(9) 5,000 deciliters = …… L (5 , 50 , 500 , 5,000)

(10) 100 dam = …… hm (1 , 10 , 100 , 1,000)

Concept (3): Measurement All Around

1. The potatoes Aya bought weighed 2 kilograms 920 grams. Her onions weighed 1,075 grams less than the potatoes. How much did the potatoes and onions weigh together?

2. A pharaoh ant grows from egg to adult in 45 days. A carpenter ant grows from egg to adult in 12 weeks. Which species takes longer to grow from egg to adult? How much longer?

3. A fish tank with a capacity of 100 liters is filled with 20,000 milliliters of water. How many more liters of water are needed to fill it up completely?

4. Zeina purchased 8 kilograms of sugar, 10 kilograms of flour, 500 grams of cocoa, 225 grams of pecans, and 275 grams of coconut. What is the total mass of her groceries in kilograms?

Mr. Emad bought four 2-liter bottles of soda for the Primary 4 picnic. If there were 2 liters and 829 milliliters of soda remaining at the end of the party, how many milliliters of soda did the students drink?

Worker ants take power naps totaling up to 250 minutes a day. A queen ant may sleep up to 9 hours a day. Which ant sleeps longer and by how many minutes?

Ahmed has a 12-meter-long piece of wood. He wants to cut it into 3 equal lengths. How long should each cut piece be in meters? How long will each of these pieces be in centimeters?

Ayman is a runner. While Ayman is in training, he needs to drink 500 milliliters of water 4 times per day. How many liters of water will that be for 1 week?

Ehab is a weightlifter. He has a mass of 100 kilograms. His aim is to gain 500 grams per week. If he does that for 5 weeks, what will his mass be at the end?

Homework

Solve. Show your work.

1. 3:45 + 25 min = ________

2. 2:45 + 6:17 = ________

3. 3:07 – 42 min = ________

4. 5:07 – 2:13 = ________

5. An ant's first nap of the day began at 7:45 a.m. and lasted for 60 seconds. What time did the ant wake up?

6. The ant then worked in the colony for 3 hours and 13 minutes before its next nap. What time did the ant take his second nap?

A clock is shown.



What time does the clock show?

A. 10:04

B. 10:01

C. 1:10

D. 1:50

Bast's school day is 5 hours long. How can she find how long the school day is in minutes?

A. multiply 5 by 60

B. add 5 and 60

C. multiply 5 by 24

D. add 5 and 24

Bakari is going on a trip for 2 full days. How could he figure out how many hours he will be away?

A. add 2 and 24

B. multiply 2 by 24

C. add 2 and 60

D. multiply 2 by 60

Taher grew 10 centimeters in 1 year. He is now 1 meter 6 centimeters tall. How many centimeters tall was Taher 1 year ago?

An ant from Colony A walked 2 kilometers in a day. An ant from Colony B walked 3,000 meters in a day. Which ant walked the farthest and how much farther in kilometers did it walk?

Ali's cat weighs 7 kilograms and his dog weighs 17 kilograms. When Ali took them to the vet, he learned that his cat gained 450 grams and his dog gained 120 grams. How much do his two pets weigh in all now?

Rania is measuring two ant lines. Colony A's ant line is 30 centimeters long, and Colony B's ant line is 500 millimeters long. How many centimeters long are the two ant lines together?

Amany is a swimmer. She spends half an hour every day swimming. How many minutes in total does she swim for during a 5-day period?

Sara travelled 9 days continuously. She travelled 5,000 meters each day. How many kilometers did she walk in all?



Ants walk about 5,000 meters each day. How many kilometers do ants walk in 6 days?

Samira is studying for an upcoming math test. If she studies for 30 minutes a day, how many hours will she have spent studying in 8 days?

A colony of ants eats approximately 2,000 grams of food each day. If the ants have 10 kilograms of food stored, how many days will the food last?

An ant may walk up to 5 km per day. If the ant continues this for 20 days, how many meters will the ant walk?

MATHEMATICAL PRACTICE 7 **Look for a Pattern Algebra** Complete.

Liters	Milliliters
1	1,000
2	
3	
	4,000
5	
6	
	7,000
8	
9	
10	

Kilograms	Grams
1	1,000
2	
	3,000
4	
5	
6	
7	
	8,000
9	
10	

Complete.

8 kilograms = ______ grams

7 liters = ______ milliliters

MATHEMATICAL PRACTICE 4 **Use Symbols Algebra** Compare using <, >, or =.

1 kilogram ◯ 900 grams

2 liters ◯ 2,000 milliliters

17. WRITE Math Jill has two rocks. One has a mass of 20 grams and the other has a mass of 20 kilograms. Which rock has the greater mass? Explain.

______

______

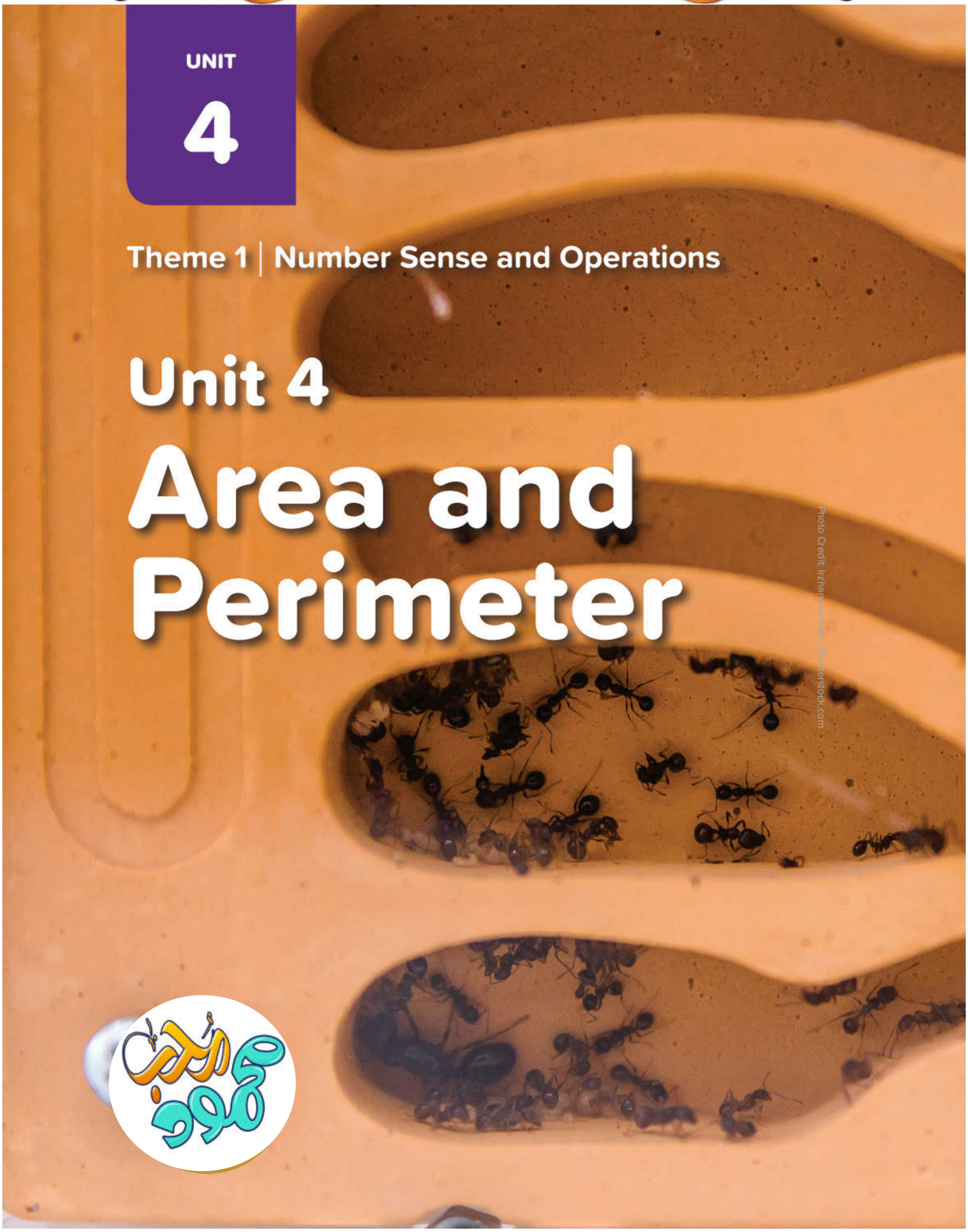
______

18. THINKSMARTER For numbers 18a–18c, choose Yes or No to tell whether the measurements are equivalent.

18a. 5,000 grams and 5 kilograms ○ Yes ○ No

18b. 300 milliliters and 3 liters ○ Yes ○ No

18c. 8 grams and 8,000 kilograms ○ Yes ○ No



UNIT 4

Theme 1 | Number Sense and Operations

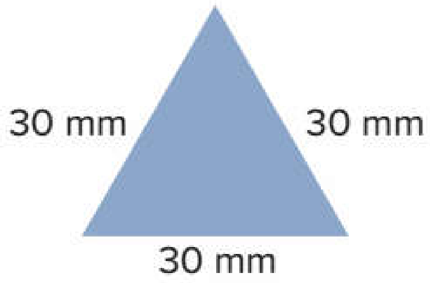
Unit 4
Area and Perimeter

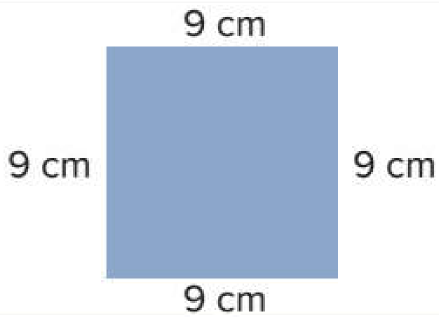
Concept (1): Explore Area and Perimeter

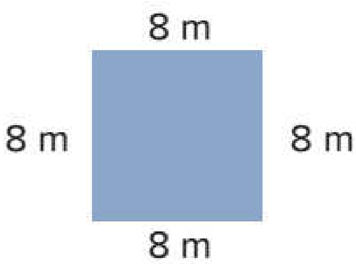
Rectangle Review Compare the shapes in the boxes. Highlight or circle all of the rectangles and place a star on the squares.

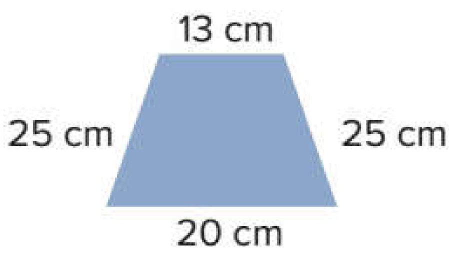


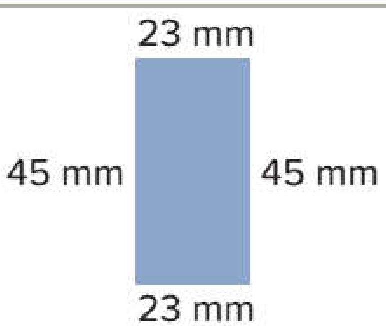






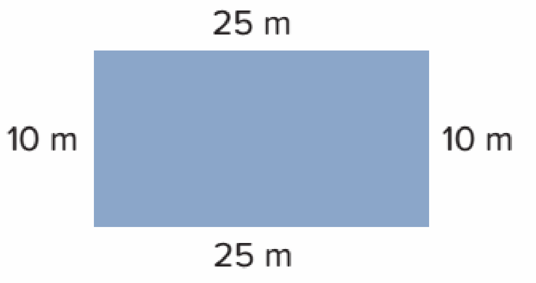








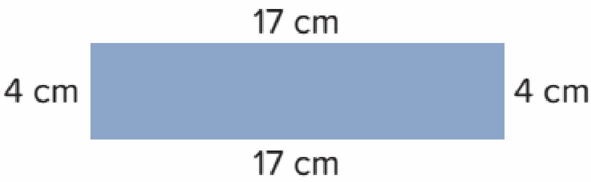
A group of worker ants are in search of food. They secrete pheromones (chemicals) to lay a scent trail. They follow each other in a line around a building. Using the model that follows, what is the perimeter of the building?



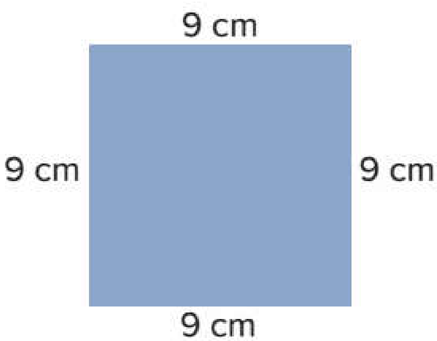

Ant Carrying Food

....

Use the $P = l + w + l + w$ formula to calculate the perimeter of the shapes. Show your work.

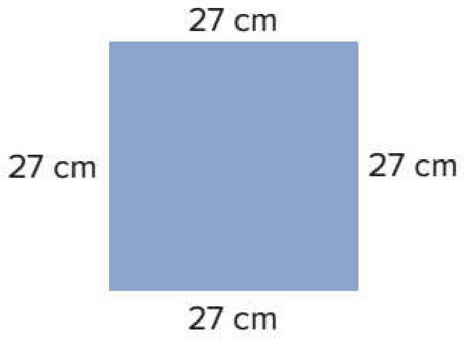


Use the $P = l + w + l + w$ formula to calculate the perimeter of the shapes. Show your work.



Foraging for Formulas Calculate the perimeter of the shapes that follow. Use two different formulas to solve each problem. Show your work.

1.



Formula 1: ____

Formula 2: ____

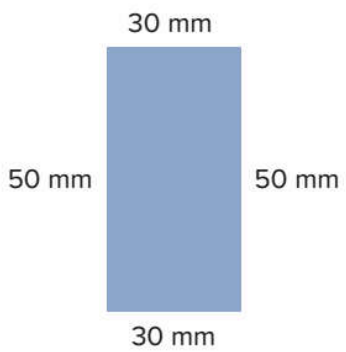
2.



Formula 1: ____

Formula 2: ____

3.

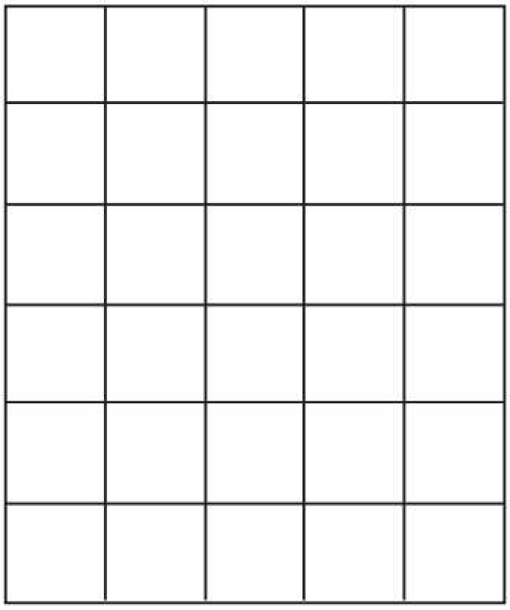


Formula 1: ____

Formula 2: ____

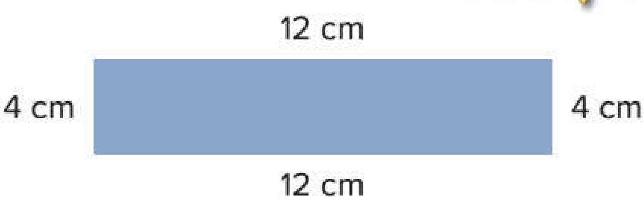
Area Review Determine the area of the rectangles. Show your work.

1.



Area = ______________________

2.

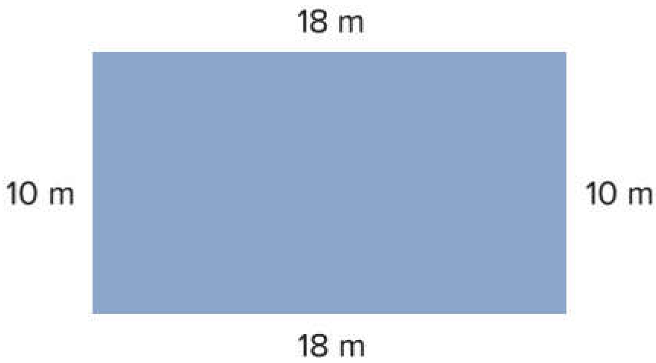


Area = ______________________

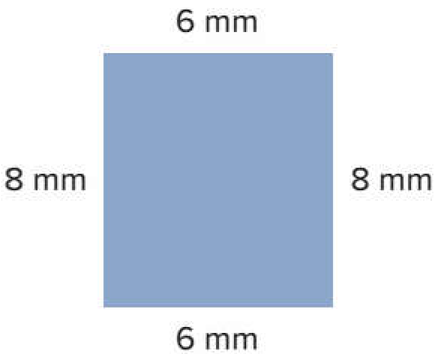


Area Practice Solve the problems. Show your work and label your answers.

1. Find the area.



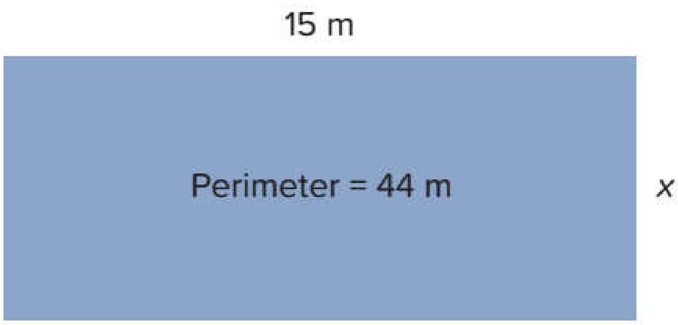
2. Find the area.



For a science project, two students are creating an ant farm enclosure. Their enclosure will be 5 meters long and 2 meters wide. Sketch the enclosure and label the dimensions. Then, find the perimeter and area.

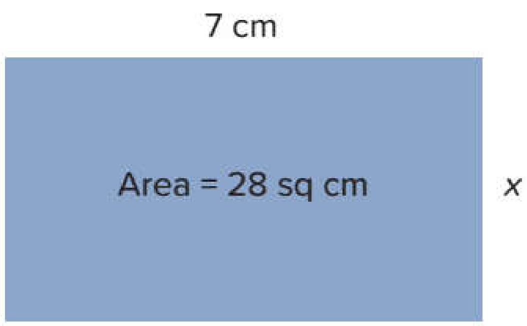
The area of a rectangular bakery is 30 square meters. What could the perimeter be? Sketch your answer and label the dimensions.

Find the unknown side length based on the perimeter given.



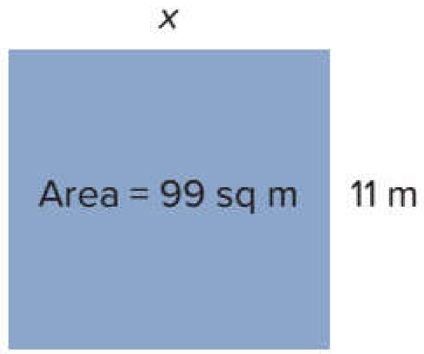
$x =$ ____________________

Find the unknown side length based on the area given.

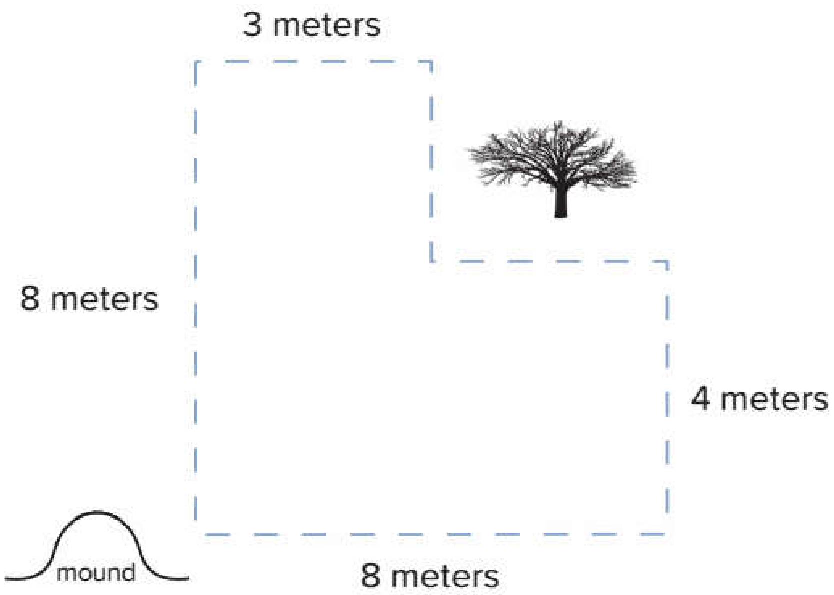


$x =$ ____________________

Find the unknown side length based on the area given.



x = ____________________

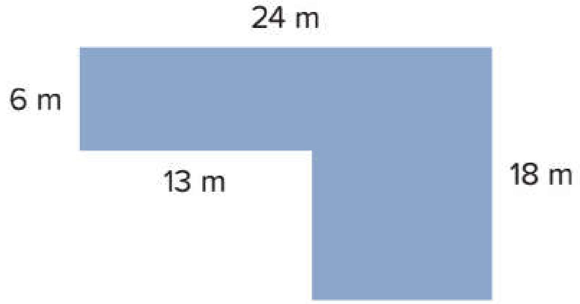


Perimeter = ____________________

Area = ____________________

Calculating Crazy Shapes Solve each problem.

1. Divide this shape into smaller rectangles or squares. Then, calculate its area and perimeter. Show your work.



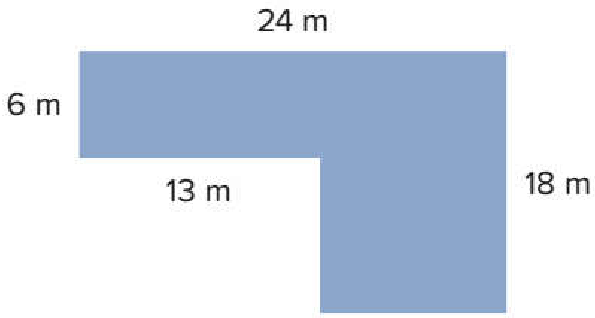
Area = ______________________________

____

____

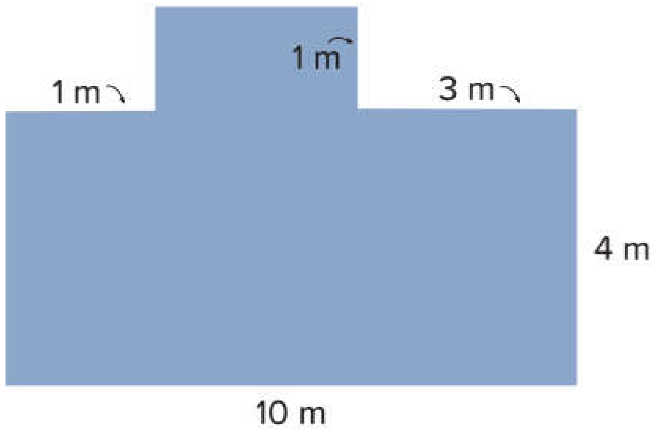
Perimeter = ______________________________

2. Divide the shape in a different way and calculate its area and perimeter. Show your work.



Area = ______________________________

Perimeter = ______________________________



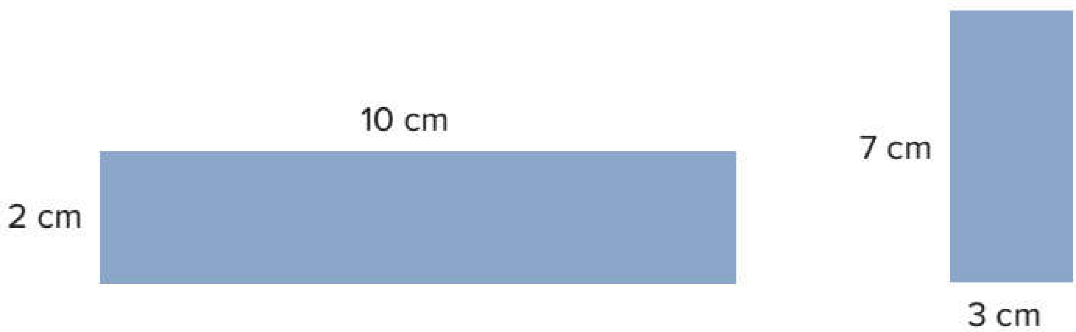
Area = ______________________________

____

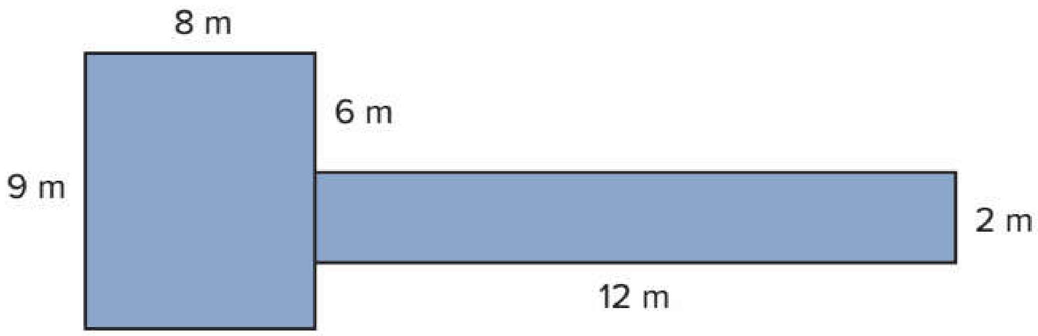
____

Perimeter = ______________________________

Combine these two simple shapes into a complex shape. Sketch your shape, labeling the sides. Then, calculate the area and perimeter of the complex shape.



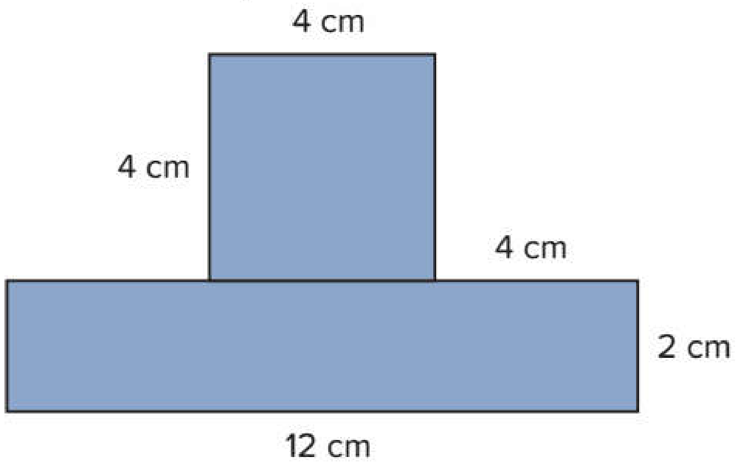
Calculate the area and perimeter.



Area = ______________________________

Perimeter = ______________________________

Calculate the area and perimeter.



Area = ______________________________

Perimeter = ______________________________

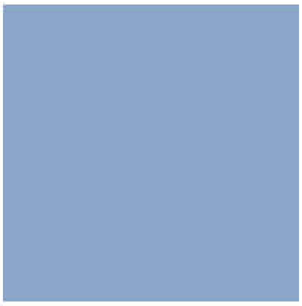
The summary

	Rectangle	Square
Area	A = L × W	A = L × L
Perimeter	P = (L + W) × 2	P = L × 4

Homework

Find the perimeter. Show your work.

1. 425 mm

425 mm  425 mm

425 mm

2. 57 m

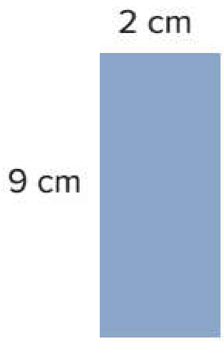
 13 m

3. Sherif is building a square picture frame. Each side will be 36 millimeters long. What will the perimeter of the frame be?

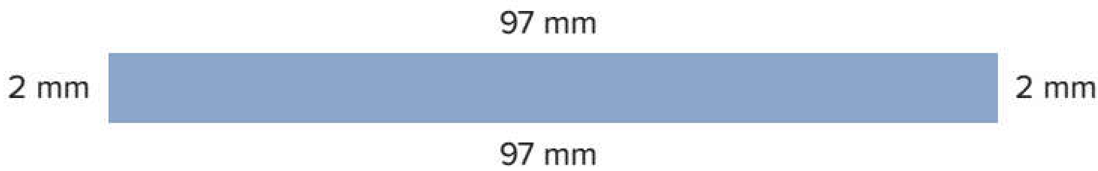
4. Omar is building a rectangular fence around his garden. The length is 8 meters and the width is 6 meters. How many meters of fencing will he need to build?

Find the area and perimeter of the rectangles. Show your work and label your answers.

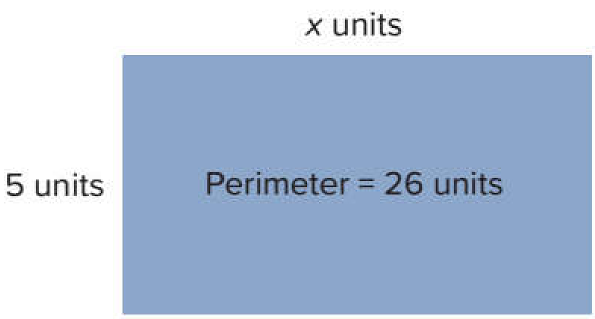
1.



2.



Mystery Dimension Work with a partner to answer the questions about the rectangles.

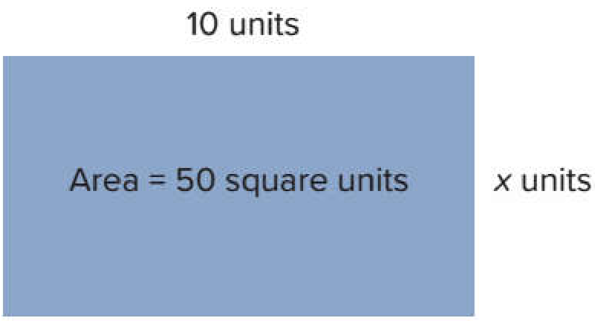


1. What is known about this rectangle?

____

2. What is unknown about this rectangle?

____

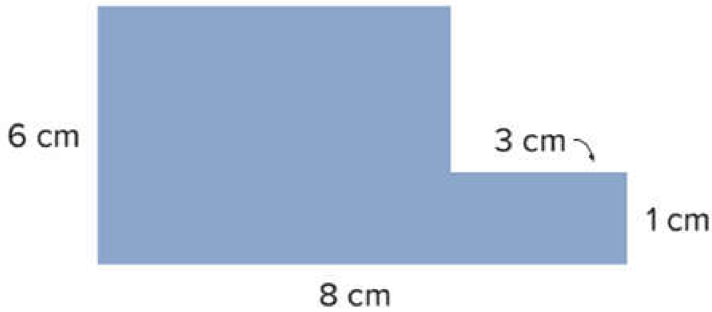


What is known about this rectangle?

____

What is unknown about this rectangle?

____



Area = ____

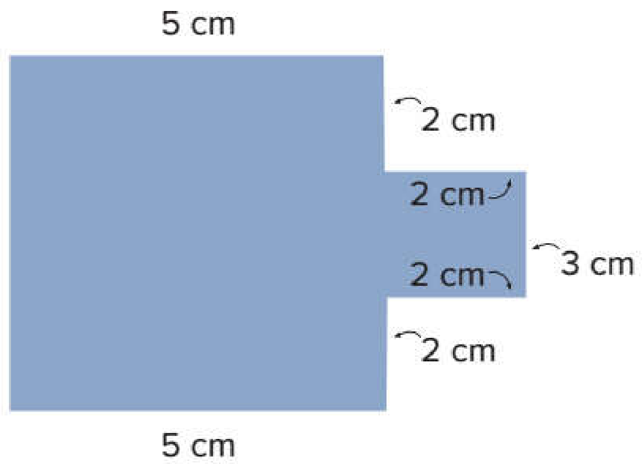
____

____

Perimeter = ____







Area = ______________________________

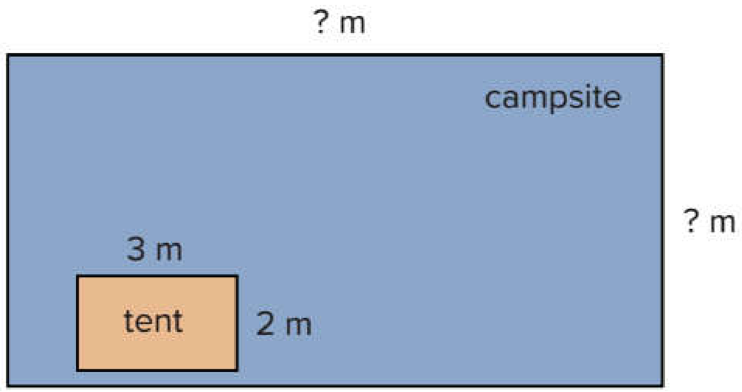
____

____

Perimeter = ______________________________

____

Rami and Salah went on a camping trip. The diagram of their campsite is shown. If the length of the campsite is six times the length of the tent and the width of the campsite is three times the width of the tent, how much room will they have left to set up the rest of their camping gear?

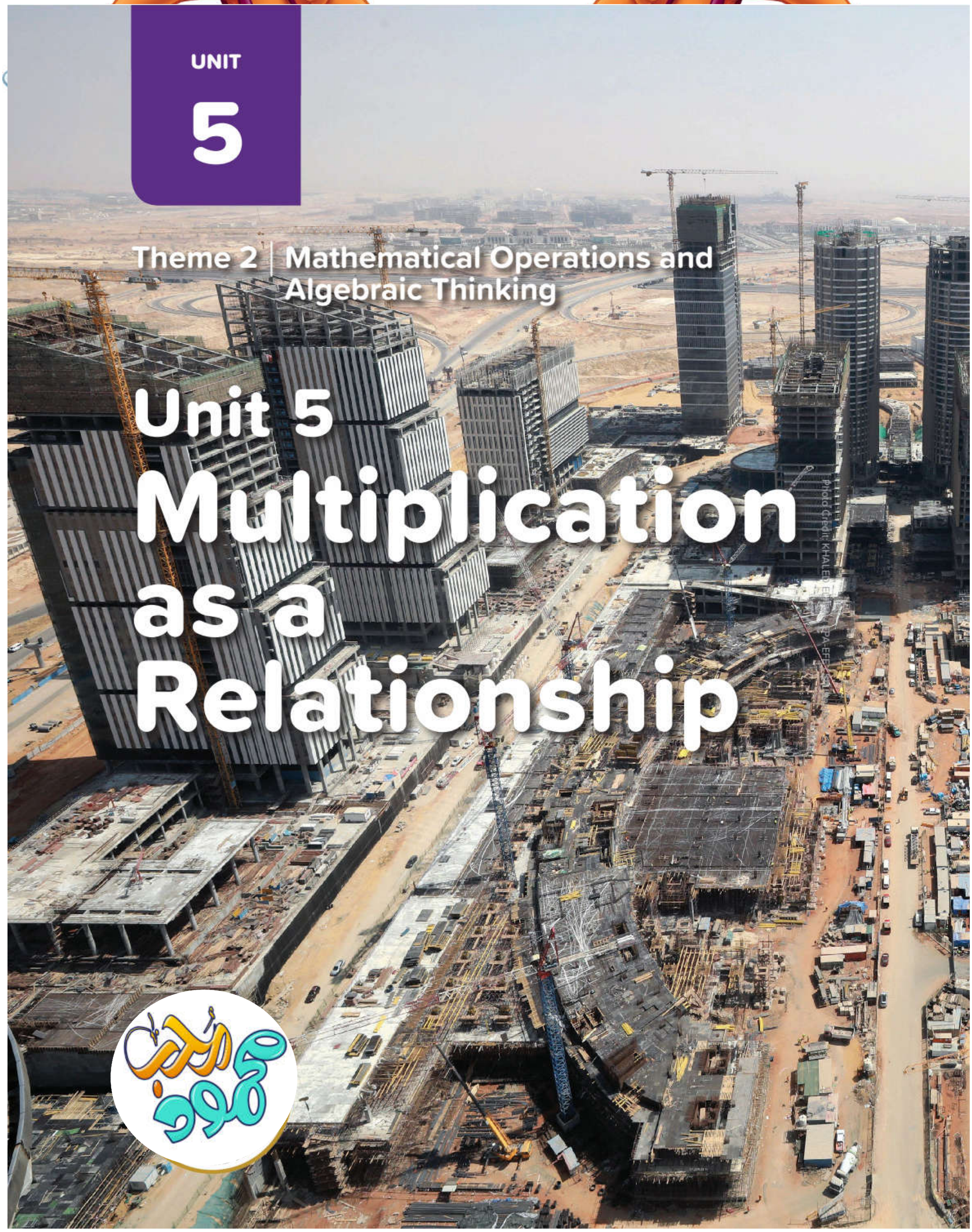


Choose the correct answer:

1	The perimeter of a square = ... A) L X L B) L X 4 C) L X W D) (L+W) X 2
2	The area of a square = ... A) L X L B) L X 4 C) L X W D) (L+W) X 2
3	The perimeter of a rectangle = ... A) L X L B) L X 4 C) L X W D) (L+W) X 2
4	The area of a rectangle = ... A) L X L B) L X 4 C) L X W D) (L+W) X 2
5	The perimeter of a square of side length is 3 cm = ... cm A) 12 B) 20 C) 16 D) 28
6	The perimeter of a square of side length is 5 cm = ... cm A) 12 B) 20 C) 16 D) 28
7	The perimeter of a square of side length is 4 cm = ... cm A) 12 B) 20 C) 16 D) 28
8	The perimeter of a square of side length is 7 cm = ... cm A) 12 B) 20 C) 16 D) 28
9	The area of a square of side length is 3 cm = ... A) 9 cm B) 9 cm^2 C) 12 cm^2 D) 12 cm
10	The area of a square of side length is 4 cm = ... cm^2 A) 8 B) 16 C) 36 D) 81
11	The area of a square of side length is 5 cm = ... A) 25 cm B) 25 cm^2 C) 20 cm^2 D) 20 cm
12	The area of a square of side length is 6 cm = ... cm^2 A) 36 B) 24 C) 60 D) 12
13	The side length of a square of perimeter is 24 cm = ... cm A) 9 B) 4 C) 5 D) 6
14	The side length of a square of perimeter is 36 cm = ... cm A) 9 B) 4 C) 5 D) 7







UNIT 5

Theme 2 | Mathematical Operations and Algebraic Thinking

Unit 5
Multiplication as a Relationship

Concept (1): Multiplicative Comparisons

1. Compare 10 and 2. 10 is ______ times greater than 2.
2. Compare 12 and 3. 12 is ______ times greater than 3.
3. Compare 18 and 6. 18 is ______ times greater than 6.

Which statement is an example of a multiplicative comparison?

A. A camel is 3 meters in length. A crocodile is 2 meters longer than a camel.

B. A camel can weigh up to 1,000 kilograms. This is twice as much as a crocodile weighs.

C. Crocodiles have 64 teeth. Camels have 32 fewer teeth than crocodiles.

D. There are about 30,000 crocodiles in Egypt. There are about 60,000 more camels in Egypt.

Rewrite each equation using multiplication.

1. 6 + 6 + 6 = 18 ____________________
2. 2 + 2 + 2 + 2 + 2 + 2 + 2 = 14 ____________________

Fill in the blanks to complete the multiplicative comparison statement for each tape diagram.

3.

5	5	5	5

______ is ______ times greater than 5.

4.

8	8	8

______ is ______ times greater than 8.

A building is 20 meters tall. A bridge is 5 meters tall. The building is how many times taller than the bridge?

A. 3

B. 4

C. 15

D. 100

Akil is twice as old as his brother. His brother is 8 years old. Which two equations can be used to find Akil's age?

A. $2 + a = 8$

B. $2 \times a = 8$

C. $2 \times 8 = a$

D. $8 + 2 = a$

E. $8 + 8 = a$

Multiplying to Show Comparisons Write an equation based on the comparison statement. Use a letter to represent the unknown number. You do not have to solve the equations.

1. 4 times greater than 3 is ____________________
2. 18 is 6 times as many as ____________________
3. 2 times greater than 7 is ____________________
4. 24 is 4 times as great as ____________________
5. 25 is 5 times as many as ____________________

How Many Seats? Use the information in the table to compare numbers of seats in different modes of transportation. Then, enter and solve an equation for each comparison.

Mode of Transportation	Number of Seats
Bicycle	1
Motorbike	2
Car	4
Truck	6
Bus	36
Metro Train	48

1. How many times as many seats are in a truck than on a motorbike?

   Equation: ____________________

   Answer: ____________________

2. How many times as many seats are on a bus than in a truck?

   Equation: ______________________

   Answer: ______________________

3. How many times as many seats are on the metro train than in a car?

   Equation: ______________________

   Answer: ______________________

4. A metro train can fit how many times more people than a truck?

   Equation: ______________________

   Answer: ______________________

5. A bus has how many times more seats than a car?

   Equation: ______________________

   Answer: ______________________

Homework

1. Compare 15 and 3. 15 is ________ times greater than 3.
2. Compare 28 and 7. 28 is ________ times greater than 7.
3. Compare 27 and 9. 27 is ________ times greater than 9.

Khepri and her sister peeled oranges. Khepri peeled 6 oranges. Khepri's sister peeled 3 times as many oranges as Khepri. Which equation can be solved to find the number of oranges that Khepri's sister peeled?

A. $6 + 3 = n$

B. $6 \times 3 = n$

C. $n + 3 = 6$

D. $n \times 3 = 6$

A fish tank has 3 red fish and 17 times as many blue fish. How many blue fish are in the tank?

A. 20

B. 31

C. 17

D. 51

Write an equation for each of the following comparisons, and then solve.

1. What number is 5 times greater than 6?

____

2. 36 is 4 times more than what number?

____

3. Ayman ate 4 figs in the morning. His older brother ate 3 times as many. How many figs did his brother eat?

____

Concept (2)
Properties and Patterns of Multiplication

HANDS-ON ACTIVITY

Arrays and the Commutative Property

Array Equation 1: 2 x 4 = ______ x ______

Array Equation 2: 3 x 7 = ______ x ______

Array Equation 3: 5 x 9 = ______ x ______

Array Equation 4: 6 x 8 = ______ x ______

Array Equation 5: 1 x 3 = ______ x ______

Apply the Commutative Property of Multiplication to complete each equation.

1. 5 x 7 = ________ x 5
2. 20 x ________ = 6 x 20

Which equation would be best to include in an explanation of the Commutative Property of Multiplication?

A. 3 × 5 = 5 × 3

B. 4 × 16 = (4 × 11) + (4 × 5)

C. (6 × 4) × 2 = 6 × (4 × 2)

D. 5 × 1 = 5

Which number is the result of multiplying a single-digit number by 10?

A. 14

B. 80

C. 400

D. 810

Products
1 × 10 = 10
5 × 10 = 50
9 × 10 = 90
13 × 10 = 130
17 × 10 = 170
21 × 10 = 210

Mental Math Number Talk Look at the problems below. Solve them mentally (without writing anything down).

1. 5 x 1
2. 12 x 1
3. 672 x 1
4. 8 x 0
5. 16 x 0
6. 758 x 0

Which equation shows how to apply the Associative Property of Multiplication to determine the value of 3 × (2 × 10)?

A. 5 × 10 = 50

B. 6 × 10 = 60

C. 3 × 20 = 320

D. 3 × 12 = 36

Follow your teacher's directions to solve the practice problems.

What is the value of each of the following:

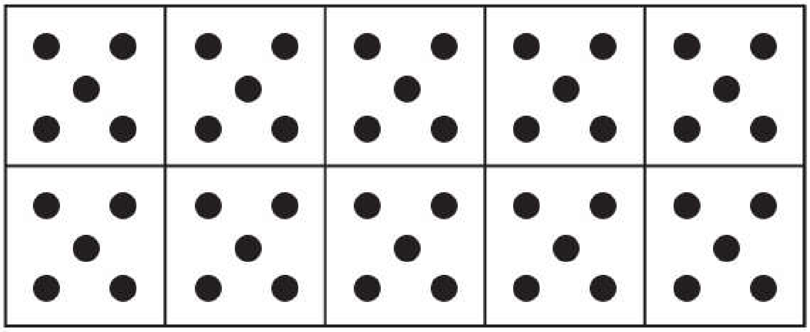
1. 100 x 5 = ________________
2. ________________ = 1,000 x 2
3. 700 = 7 x ________________
4. 9 x ________________ = 9,000
5. Challenge: 4 x 10,000 = ________________

Use your die to complete the first space then find the answer:

1. 3,000 x ______ = ______
2. ______00 x 8 = ______
3. ______ x 500 = ______
4. 9 x ______0 = ______
5. 6,000 x ______ = ______
6. ______00 x 5 = ______



Dot Card Number Talk Look at the image. How many dots do you see in the image below? How did you come up with your answer?



Uncovering the Associative Property of Multiplication Solve the problem assigned by your teacher.

Problem 1: 3 x 2 x 4 = ______

Problem 2: 4 x 2 x 3 = ______

Applying the Associative Property of Multiplication Work with a partner to solve the problems. Place parentheses around the factors that you will multiply first. Rewrite the factors in another order if helpful.

1. 3 x 2 x 5 = ______
2. 4 x 6 x 2 = ______
3. 2 x 9 x 3 = ______
4. 3 x 2 x 3 = ______

Solve each problem. Multiply the part in the parentheses first.
Show your work.

1. (2 x 3) x 4 = ____________________

2. (5 x 2) x 3 = ____________________

3. 2 x (3 x 4) = ____________________

4. 5 x (2 x 3) = ____________________

Write how many Tens make up each number.

7. 30 = _____ Tens

8. 80 = _____ Tens

9. 160 = _____ Tens

10. 140 = _____ Tens

11. 120 = _____ Tens

12. 110 = _____ Tens

Decompose each multiple of 10, 100, or 1,000 before multiplying.
Draw parentheses around the numbers you would multiply first,
and then write the answer.

1. 5 x 70 = ____________________

2. 8 x 30 = ____________________

3. 4 x 40 = ____________________

Solve using a strategy you prefer.

4. 6 x 90 =

____

Homework

Apply the Commutative Property of Multiplication to find the unknown value.

3. $33 \times 4 = 4 \times a$ ____________________

4. $b \times 9 = 9 \times 8$ ____________________

Products
2 × 100 = 200
8 × 100 = 800
14 × 100 = 1,400
20 × 100 = 2,000

Which statement *best* describes how to find the product when a number is multiplied by 100?

A. Add one zero to the left of the number.

B. Add one zero to the right of the number.

C. Add two zeros to the right of the number.

D. Add two zeros to the left of the number.

Products
6 × 1,000 = Δ
9 × 1,000 = 9,000
17 × 1,000 = 17,000
30 × 1,000 = 30,000

Based on the pattern in the table, the Δ in the first equation should be replaced by ________________________.

Which equation would be best to include in an explanation of the Associative Property of Multiplication?

A. (9 × 12) × 0 = 0

B. (4 × 6) × 1 = 4 × 6

C. (3 × 7) × 2 = 3 × (7 × 2)

D. (11 × 8) × 9 = 9 × (11 × 8)

Which One Does Not Belong? Look at the problems. Which problem does not belong in the group? Why do you think so? Be prepared to share your thinking.

1. 6 x 100 = 600
2. 9 x 100 = 900
3. 500 x 3 = 1,500
4. 8,000 = 8 x 1,000

Apply the strategies you have learned to solve the problems.

1. 900 x 3 = ____________
2. 4 x 40 = ____________
3. 8,000 x 5 = ____________
4. 600 x 3 = 3 x ____________
5. 500 x ____________ = 3,500

Place parentheses to show one way to find the product. Then, show one other way to use parentheses to find the product.

5. 5 x 4 x 2

____

6. 3 x 6 x 2

____

Decomposing Multiples of 10 Decompose each number into a factor pair with 10. Write the missing factor in the box.

1. 40 — 10 × ☐
2. 20 — 10 × ☐
3. 70 — 10 × ☐
4. 50 — 10 × ☐
5. 90 — 10 × ☐
6. 110 — 10 × ☐

Choose the *best* numbers to complete the equation.

6	**7**	**36**	**42**

A model is shown.

42						
6	6	6	6	6	6	6

Which equation is best represented by this model?

6 × ____________ = ____________

Khalid used the Associative Property to rewrite and correctly evaluate this expression: 6,000 × 7.

Which equation was *most likely* part of Khalid's work?

A. 1,000 × 13 = 1,300

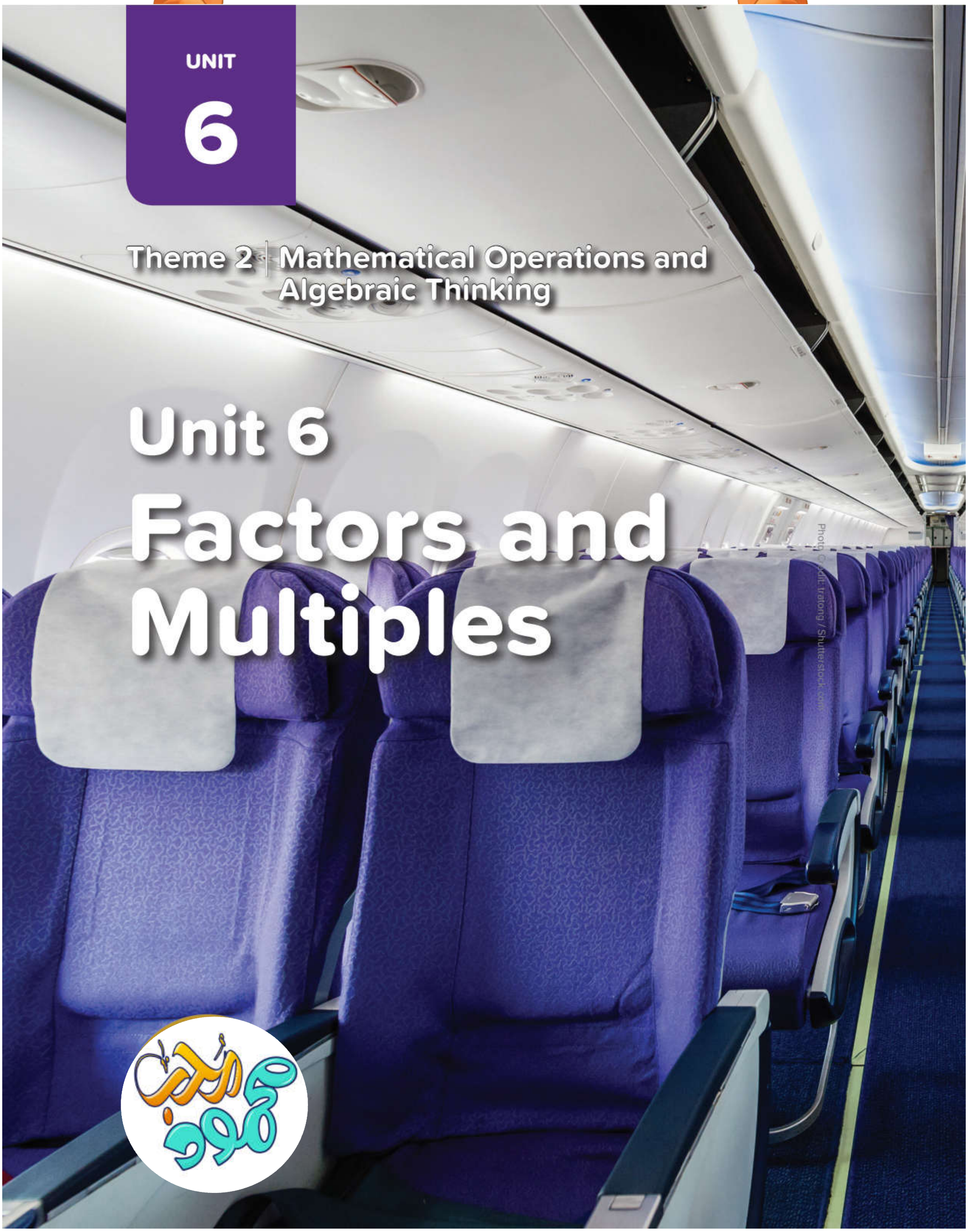
B. 1,000 × 42 = 4,200

C. 1,000 × 13 = 13,000

D. 1,000 × 42 = 42,000







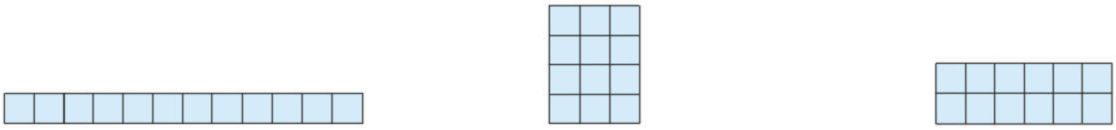
UNIT 6

Theme 2 | Mathematical Operations and Algebraic Thinking

Unit 6
Factors and Multiples

Concept (1): Understanding Factors

1. Use the arrays to name the factors of 12.



______ × ______ = 12 ______ × ______ = 12 ______ × ______ = 12

The factors of 12 are 1, ______, 3, ______, 6, and ______.

Use tiles to find all the factors of the product. Record the arrays and write the factors shown.

2. 5: ____________________

3. 20: ____________________

4. 25: ____________________

Count by 2s. Shade the numbers that you say as you count.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Count by 5s. Shade the numbers that you say as you count.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Count by 10s. Shade the numbers that you say as you count.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Determine if the given number has 2 as a factor, 5 as a factor, or 10 as a factor. Circle yes or no.

	Number	Is 2 a factor?	Is 5 a factor?	Is 10 a factor?
1	26	Yes No	Yes No	Yes No
2	70	Yes No	Yes No	Yes No
3	15	Yes No	Yes No	Yes No
4	17	Yes No	Yes No	Yes No

THINK SMARTER Sarah was organizing vocabulary words using index cards. She arranged 40 index cards in the shape of a rectangle on a poster. For 14a–14e, choose Yes or No to tell whether a possible arrangement of cards is shown.

14a. 4 rows of 10 cards ○ Yes ○ No

14b. 6 rows of 8 cards ○ Yes ○ No

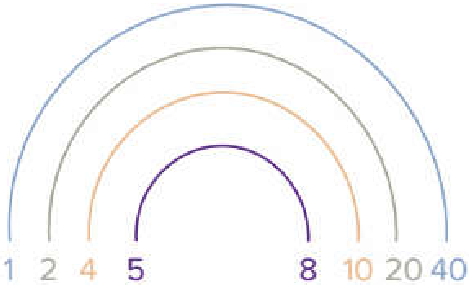
14c. 20 rows of 2 cards ○ Yes ○ No

14d. 40 rows of 1 card ○ Yes ○ No

14e. 35 rows of 5 cards ○ Yes ○ No

Show students how to create a T-chart using the factors of 40.

1	40
2	20
4	10
5	8



Finding Factor Pairs Work with your teacher to create a factor rainbow and T-chart for 40.

1. List the factors of 40.

Factor Rainbow **T-Chart**

2. List the factors of 36. There are 5 factor pairs.

Factor Rainbow **T-Chart**

3. List the factors of 20. There are 3 factor pairs.

Factor Rainbow **T-Chart**

Prime Numbers:

- The prime number is a whole number that **has only 2 factors**.
- The prime number is **divisible only by 1 and itself**.
- 2 is the **smallest** prime number.
- 3 is the **smallest odd** prime number.
- 2 is the **only even prime** number.
- All prime numbers are odd except 2

Prime Numbers less than 100:

2	3	5	7
11	13	17	19
23	29		
31	37		
41	43	47	
53	59		
61	67		
71	73	79	
83	89		
97			

The Greatest Common Factor (GCF)

A class is going on a field trip. There are 36 girls and 27 boys in the class. Students will be divided into groups of girls and groups of boys. What is the greatest number of groups that can be made so that each group has the same number of children? How many children will be in each group of boys? How many children will be in each group of girls?

Find the greatest common factor (GCF) of the given numbers.

4. 40 and 48

5. 12 and 18

6. 10 and 45

Homework

Highlight or circle the factors of the numbers listed.

1. 15: 2 5 10
2. 30: 2 5 10
3. 12: 2 5 10
4. 25: 2 5 10
5. 36: 2 5 10

List all of the factors of each number. You may create a factor tree, factor rainbow, or factor T-chart.

6. 25:
7. 19:
8. 48:
9. 16:

Is 9 a factor of the number? Write *yes* or *no*.

6. 54 ______ **7.** 63 ______ **8.** 67 ______ **9.** 93 ______

Color the prime numbers in red:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	15	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

List all the factors of each number. Then, write if the number is prime or composite.

1. 14

4. 59

2. 46

5. 50

3. 22

6. 29

Choose the best words or numbers to complete each statement.

correct	1, 2, 3, 6	1, 2, 3, 6	3
incorrect	1, 2, 3, 6, 9, 18	1, 2, 3, 6, 9, 18	6
	1, 2, 3, 4, 6, 8, 12, 24	1, 2, 3, 4, 6, 8, 12, 24	12

Femi said the greatest common factor of 18 and 24 was 12.

Femi was ______________________ because the factors of 18 are

________________________________ and the factors of 24 are

________________________________. The greatest common factor of

18 and 24 is __________.

Concept (2): Understanding Multiples

The product of two numbers is a multiple of each number. Factors and multiples are related.

$$3 \times 4 = 12$$

3 → factor; 4 → factor; 12 → multiple of 3, multiple of 4

Is the number a multiple of 6? Write *yes* or *no*.

6. 3 ______ **7.** 6 ______ **8.** 16 ______ **9.** 18 ______

Is the number a multiple of 3? Write *yes* or *no*.

10. 4 ______ **11.** 8 ______ **12.** 24 ______ **13.** 38 ______

MATHEMATICAL PRACTICE 8 Generalize **Algebra** **Find the unknown number.**

15. 12, 24, 36, ______ **16.** 25, 50, 75, 100, ______

14. List the next nine multiples of each number. Find the common multiples.

Multiples of 2: 2, ______________________

Multiples of 8: 8, ______________________

Common multiples: ______________________

PRACTICE

1. Find a common multiple of 4 and 8:

2. Find a common multiple of 7 and 3:

3. Find two common multiples of 2 and 6:

4. Find two common multiples of 4 and 6

5. Which is a common multiple of 5 and 8: 20, 40, 35

6. Which is NOT a common multiple of 9 and 6: 18, 27, 36

Think about the relationships between the numbers in each group.
Write at least two sentences describing what you notice.

1. 3, 6, and 12

2. 4, 8, 16, and 24

3. How are factors and multiples related?

Which list of numbers are all common multiples of 3 and 7?

A. 1, 3, 7

B. 21, 42, 63

C. 21, 28, 35

D. 15, 21, 27

Is 27 a multiple of 9?

A. yes, because factors of 27 are 3 and 9

B. no, because factors of 9 are 1 and 9

C. no, because multiples of 27 are 9 and 243

D. yes, because multiples of 27 are 9 and 3

Bes thinks 12 is a factor of 36. Is he correct?

A. no, because 36 is not a factor of 12

B. yes, because 12 is not a multiple of 36

C. no, because 12 and 36 are evenly divisible by 2

D. yes, because 12 can be evenly multiplied to equal 36

THINK SMARTER For numbers 29a–29e, select True or False for each statement.

29a.	The number 45 is a multiple of 9.	○ True	○ False
29b.	The number 4 is a multiple of 16.	○ True	○ False
29c.	The number 28 is a multiple of 4.	○ True	○ False
29d.	The number 4 is a factor of 28.	○ True	○ False
29e.	The number 32 is a factor of 8.	○ True	○ False

Homework

Choose the correct answer:

1. Number of factors of 3 is ……………………………
   A) 2 B) 3 C) 4 D) 5

2. Number of factors of 8 is ……………………………
   A) 2 B) 3 C) 4 D) 5

3. Number of factors of 9 is ……………………………
   A) 2 B) 3 C) 4 D) 5

4. The number 12 has …………………………… factors
   A) 3 B) 4 C) 5 D) 6

5. 3 is a factor of ……………………………
   A) 35 B) 20 C) 27 D) 31

6. 3 is a factor of ……………………………
   A) 18 B) 20 C) 25 D) 31

7. …………………………… is a factor of 6
   A) 2 B) 5 C) 7 D) 9

8. …………………………… is a factor of 12
   A) 5 B) 3 C) 9 D) 10

9. The number that is divisible by 2 is called ………………
   A) Odd B) Even C) Prime D) Otherwise

10. The number that has only two factors is ………………
    A) 2 B) 10 C) 6 D) 9

11. The smallest even prime number is ………………
    A) 0 B) 1 C) 2 D) 3

12. ……………… Is a prime number.
    A) 4 B) 6 C) 8 D) 7

13. ……………… Is a prime number.
    A) 11 B) 6 C) 8 D) 10

14	From the prime numbers .... A) 31 B) 10 C) 12 D) 16
15	.....................Is a prime factor of 10 A) 1 B) 6 C) 5 D) 10
16	.... Is a prime number between 30 and 40 is A) 33 B) 35 C) 37 D) 39
17	.... Is a prime number between 32 and 40 is A) 33 B) 35 C) 37 D) 39
18	The number whose prime factors are 2 , 2 , 2 and 3 is .... A) 20 B) 22 C) 24 D) 28
19	Number of factors of 4 is .... A) 2 B) 3 C) 4 D) 5
20	Number of factors of 11 is .... A) 2 B) 3 C) 4 D) 5
21	The number 18 has .... factors A) 3 B) 4 C) 5 D) 6
22	5 is a factor of .... A) 25 B) 8 C) 16 D) 24
23	.... is a factor of 6 A) 10 B) 1 C) 7 D) 9
24	.... is a factor of 12 A) 5 B) 7 C) 4 D) 10
25	The number that has only two factors is .... A) 12 B) 7 C) 6 D) 9
26	The only even prime number is .... A) 0 B) 1 C) 2 D) 3

For numbers 12a–12e, select True or False for each statement.

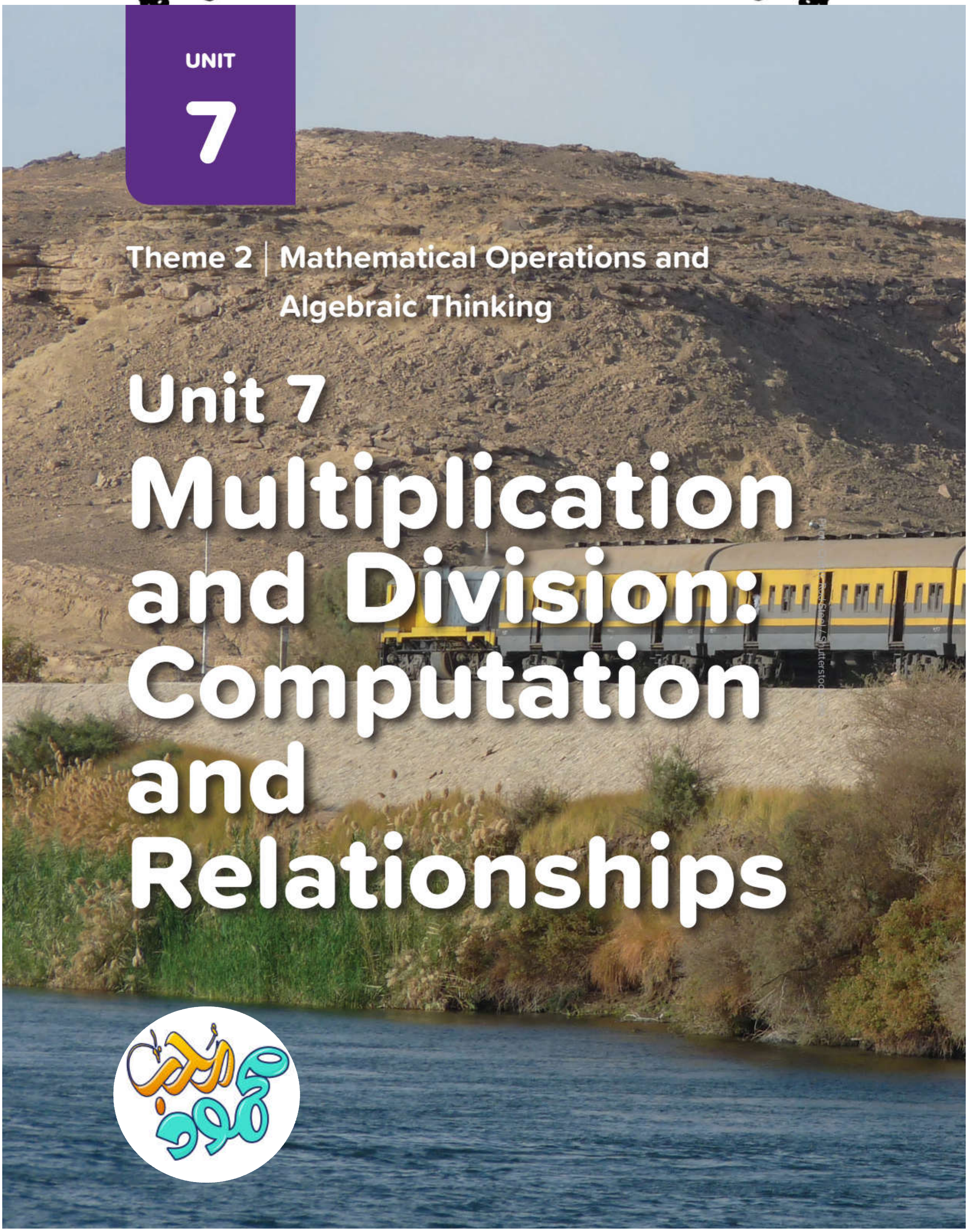
12a. The number 36 is a multiple of 9. ○ True ○ False

12b. The number 3 is a multiple of 9. ○ True ○ False

12c. The number 54 is a multiple of 9. ○ True ○ False

12d. The number 3 is a factor of 9. ○ True ○ False

12e. The number 27 is a factor of 9. ○ True ○ False



UNIT
7

Theme 2 | Mathematical Operations and Algebraic Thinking

Unit 7

Multiplication and Division: Computation and Relationships

Concept (1)
Multiplying by 1-Digit and 2-Digit Factors



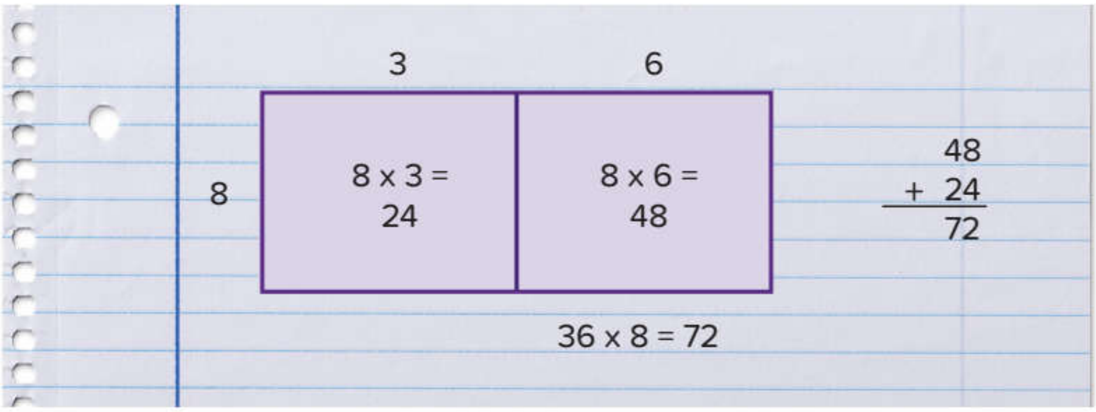
River Boat on the Nile

Twenty-two passengers can fit on each river bus at a time. What is the maximum number of passengers the river bus can carry if it makes 5 trips?

Decomposing Numbers Fill in the missing number for each decomposition.

1. 536 = 500 + ____________ + 6
2. 1,275 = ____________ + 200 + 70 + 5
3. 264 = 60 + 4 + ____________
4. 7,625 = 5 + 7,000 + 20 + ____________
5. 357 = 50 + ____________ + 7

A student solved the problem 36 x 8 in the following way:



Is that true? Why?

The Distributive Property and Area Models Use the area model to solve each problem.

1. 249 x 5

2. 4,734 x 5

3. 530 x 7

4. 2,391 x 8

Partial Product

Example:

```
     731
×      4
2,800 (700 × 4)
  120 (30 × 4)
+   4 (1 × 4)
2,924
```

```
  239
×   7
1,400 ( 7 × 200 )
  210 ( 7 × 30 )
+  63 ( 7 × 9 )
1,673
```

Problem	Partial Products
7 x 59	
624 x 4	
6 x 3,293	

```
      6,421
x         6
-----------
     36,000   (______ x ______)
     ______   (6 x 400)
        120   (6 x ______)
+    ______   (6 x 1)
-----------
     ______
```

Solve using the partial products algorithm.

1. 4,731 x 4 =

2. 29 x 4 =

Similarities in Models Estimate the products of the two problems. Then, solve using the method assigned by your teacher.

1. 64 x 7

Estimate:

Solved Answer:

2. 132 x 8

Estimate:

Solved Answer:

3. 32
x 3

Estimate:
30 x 3 = 90

Answer:
32 x 3 = 96

4. 17
x 6

Estimate:
20 x 6 = 120

Answer:
17 x 6 = 102

5. 134
x 2

Estimate:

Answer:

6. 758
x 3

Estimate:

Answer:



Ten Times Predict what you think will happen when you multiply two multiples of 10 together.

30 x 5 = 150

30 x 50 = ____________

2 x 80 = 160

20 x 80 = ____________

70 x 7 = 490

70 x 70 = ____________

50 x 60 = ____________

90 x 70 = ____________

40 x 40 = ____________

60 x 30 = ____________

A group of 38 people want to travel by bus. Each bus ticket costs 30 LE. How much do they need to pay in all?



Buses Parked at a Pyramid



	Problem	Numbers and Symbols
1.	40 x 62	
2.	70 x 55	
3.	54 x 30	
4.	40 x 78	
5.	44 x 20	
6.	15 x 30	
7.	10 x 40	
8.	72 x 40	

Create area models to solve the problems.

1. 45 x 28 = 1,260

x	40	5
20	800	100
8	320	40

800 + 100 + 320 + 40 = 1,260

2. 81 x 23 = 1,863

4. There are 6 people who won 145 pounds each at the fair. How much money did they win all together?

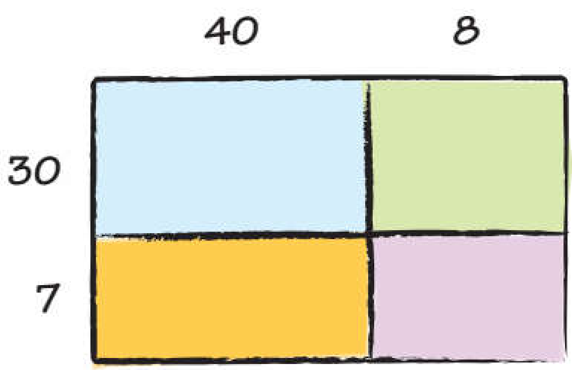
19. THINK SMARTER Select the expressions that have the same product as 35×17. Mark all that apply.

- ○ $(30 \times 10) + (30 \times 7) + (5 \times 10) + (5 \times 7)$
- ○ $(35 \times 30) + (35 \times 5) + (35 \times 10) + (35 \times 7)$
- ○ $(35 \times 10) + (30 \times 10) + (5 \times 10) + (5 \times 7)$
- ○ $(30 \times 17) + (5 \times 17)$
- ○ $(35 \times 10) + (35 \times 7)$
- ○ $(35 \times 30) + (35 \times 5)$

For numbers 3a–3e, select Yes or No to show if the answer is correct.

3a.	$35 \times 10 = 350$	○ Yes	○ No
3b.	$19 \times 20 = 380$	○ Yes	○ No
3c.	$12 \times 100 = 120$	○ Yes	○ No
3d.	$70 \times 100 = 7{,}000$	○ Yes	○ No
3e.	$28 \times 30 = 2{,}100$	○ Yes	○ No

The model shows 48×37. Write the partial products.



Homework

Use numbers and symbols to solve each problem.

	Problem	Numbers and Symbols
1.	32 x 7	
2.	5 x 483	
3.	7 x 723	
4.	1,673 x 8	





2,523	
x 5	
10,000	(______ x ______)
______	(5 x 500)
100	(5 x ______)
+ ______	(5 x 3)
______	

3. 5 x 343 =

7. 1,349
x 2

Estimate:

Answer:

8. 2,327
x 4

Estimate:

Answer:

Solve using the standard algorithm.

1. 7 x 30 = ______________
2. 4 x 800 = ______________
3. 27 x 3 = ______________
4. 204 x 2 = ______________
5. 2,213 x 4 = ______________
6. 1,390 x 2 = ______________
7. 735 x 5 = ______________

Solve using the area model or the partial products algorithm. Use estimation to check the reasonableness of your answers.

1. 23 x 40 = ______________
2. 20 x 54 = ______________
3. 90 x 32 = ______________
4. 5 x 13 = ______________
5. 10 x 56 = ______________
6. 30 x 78 = ______________

3. 60 x 12 = 720

Which product is shown by the model? Write the letter of the product on the line below the model.

Ⓐ 17×36 Ⓑ 24×14 Ⓒ 13×13

	10	3
10	100	30
3	30	9

______

	30	6
10	300	60
7	210	42

______

	10	4
20	200	80
4	40	16

______

Select another way to show 25×18. Mark all that apply.

- ○ $(20 \times 10) + (20 \times 8) + (5 \times 10) + (5 \times 8)$
- ○ $(25 \times 20) + (25 \times 5) + (25 \times 10) + (25 \times 8)$
- ○ $(20 \times 18) + (5 \times 10) + (5 \times 8)$
- ○ $(25 \times 10) + (25 \times 8)$
- ○ $(25 \times 20) + (25 \times 5)$

Concept (2): Dividing by 2-Digit Divisors

Learning Targets

- I can identify the **dividend**, **divisor**, and **quotient** of a division problem.
- I can solve division problems.
- I can explain what a **remainder** represents in a division problem.

Division Patterns Label the parts in the equation using the words divisor, dividend, and quotient. Then, look for patterns to complete the remaining problems. The first problem in the table is an example that is filled in for you.

600 ÷ 3 = Answer

600 is called the ______________________.

3 is called the ______________________.

The answer is called the ______________________.

There were 540 crayons in a large bin. Students were asked to put 9 crayons in a small box for each student to use. How many small boxes will students need in order to complete this task?

Equation	Related Fact	Quotient
600 ÷ 3	6 ÷ 3 = 2	200
150 ÷ 5		
1,200 ÷ 6		
200 ÷ 4		
700 ÷ 7		
6,400 ÷ 8		
4,500 ÷ 9		
270 ÷ 3		

Use Arrays to Divide **Draw to complete each array. Then complete the number sentence.**

1. 

$8 \div 4 =$ ______

2. 

$21 \div 3 =$ ______

Partial Quotient Algorithm

Model Match Write the division problem that matches each area model. Remember to include the quotient and remainder, if there is one.

1.

6	300	60	18
	50	10	3

4	4,000	1,200	400	28	
	1,000	300	100	7	R3

Let's Try It Solve the problems using the standard algorithm.

1. 454 ÷ 3
2. 778 ÷ 2
3. 368 ÷ 3
4. 4,858 ÷ 4

Solve using the standard division algorithm. Show your work.

1. 240 ÷ 6 = ____________

2. 1,500 ÷ 5 = ____________

3. 414 ÷ 4 = ____________

4. 761 ÷ 6 = ____________

Yahia placed 21 paints equally on 3 tables. How many paints were placed on each table?

Use counters to find the quotient and remainder.

1. 10 ÷ 3 ______
2. 28 ÷ 5 ______
3. 15 ÷ 6 ______
4. 11 ÷ 3 ______
5. 29 ÷ 4 ______
6. 34 ÷ 5 ______
7. 25 ÷ 3 ______
8. $7\overline{)20}$ ______

GO DEEPER Alyson has 46 beads to make bracelets. Each bracelet has 5 beads. How many more beads does Alyson need so that all the beads she has are used? Explain.

______

______

______

THINK SMARTER For 13a–13d, choose Yes or No to tell whether the division expression has a remainder.

13a. 36 ÷ 9 ○ Yes ○ No

13b. 25 ÷ 3 ○ Yes ○ No

13c. 82 ÷ 9 ○ Yes ○ No

13d. 28 ÷ 7 ○ Yes ○ No

Use basic facts and place value to find the quotient.

3. 360 ÷ 6 = ______
4. 2,000 ÷ 5 = ______
5. 4,500 ÷ 9 = ______

Homework

2. 3200 ÷ 8 = ________

3. 67 ÷ 3 = ________

4. 455 ÷ 4 = ________

Use basic facts and place value to find the quotient.

6. 560 ÷ 8 = ______ **7.** 200 ÷ 5 = ______ **8.** 240 ÷ 4 = ______

9. 810 ÷ 9 = ______ **10.** 6,400 ÷ 8 = ______ **11.** 3,500 ÷ 7 = ______

12. 5,000 ÷ 5 = ______ **13.** 9,000 ÷ 3 = ______ **14.** 3,000 ÷ 5 = ______

24. THINK SMARTER Which quotients are equal to 20? Mark all that apply.

(A) 600 ÷ 2

(B) 1,200 ÷ 6

(C) 180 ÷ 9

(D) 140 ÷ 7

(E) 500 ÷ 5



Solve the problems.

a. 27 ÷ 5 = ___________

b. 156 ÷ 4 = ___________

c. 2,704 ÷ 3 = ___________

d. 583 ÷ 6 = ___________

Divide. Use partial quotients.

4. $9\overline{)198}$

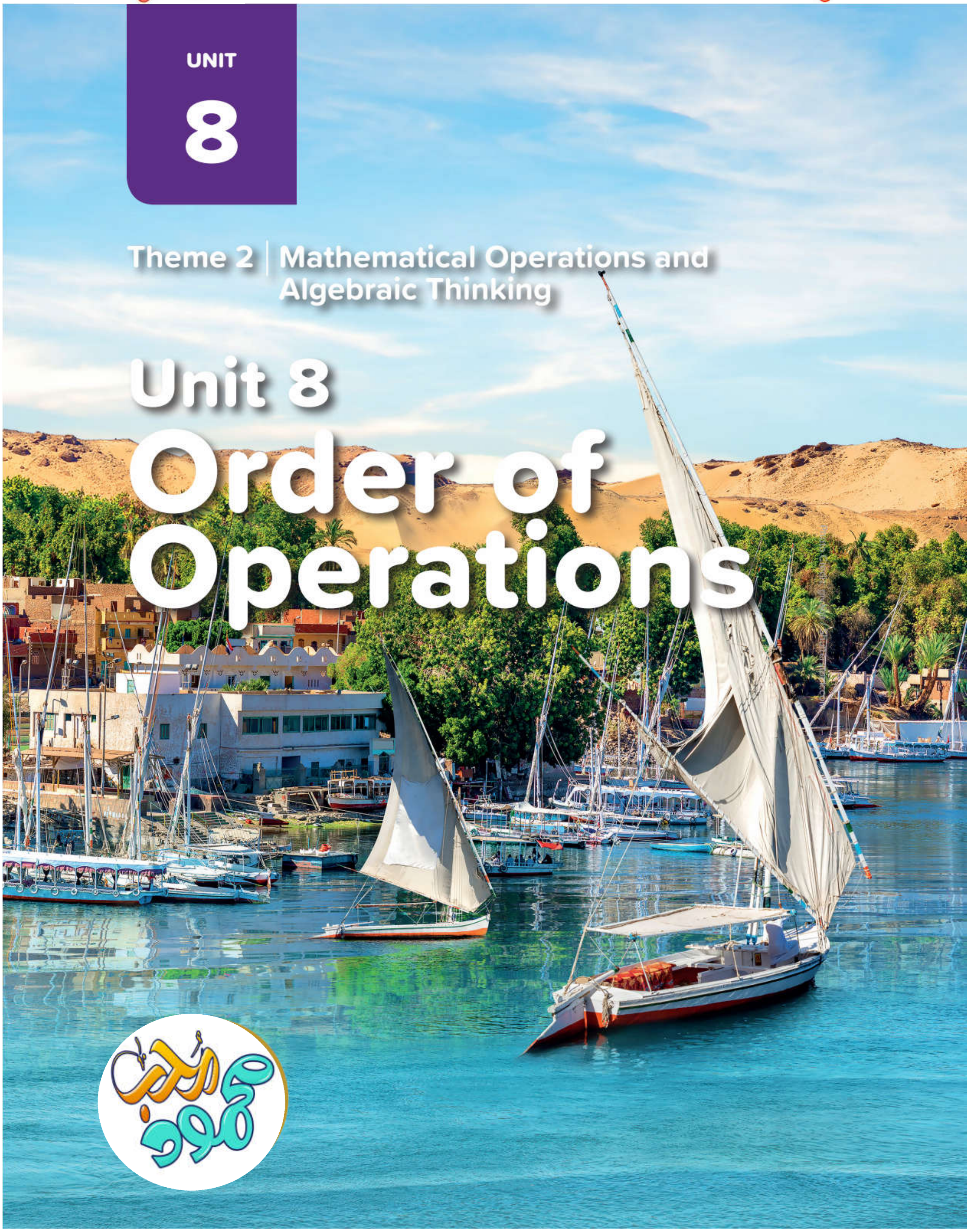
5. $7\overline{)259}$

6. $8\overline{)864}$

7. $6\overline{)738}$







UNIT
8

Theme 2 | Mathematical Operations and Algebraic Thinking

Unit 8
Order of Operations

Order of Operations

Parentheses

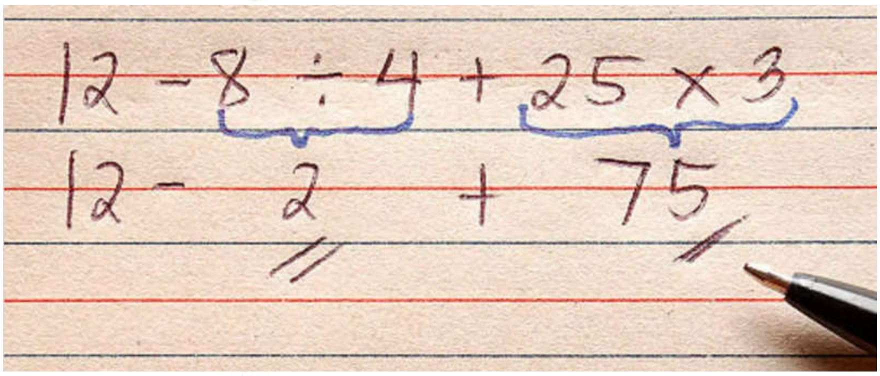
Multiplication and Division (left-to-right)

Addition and Subtraction (left-to-right)

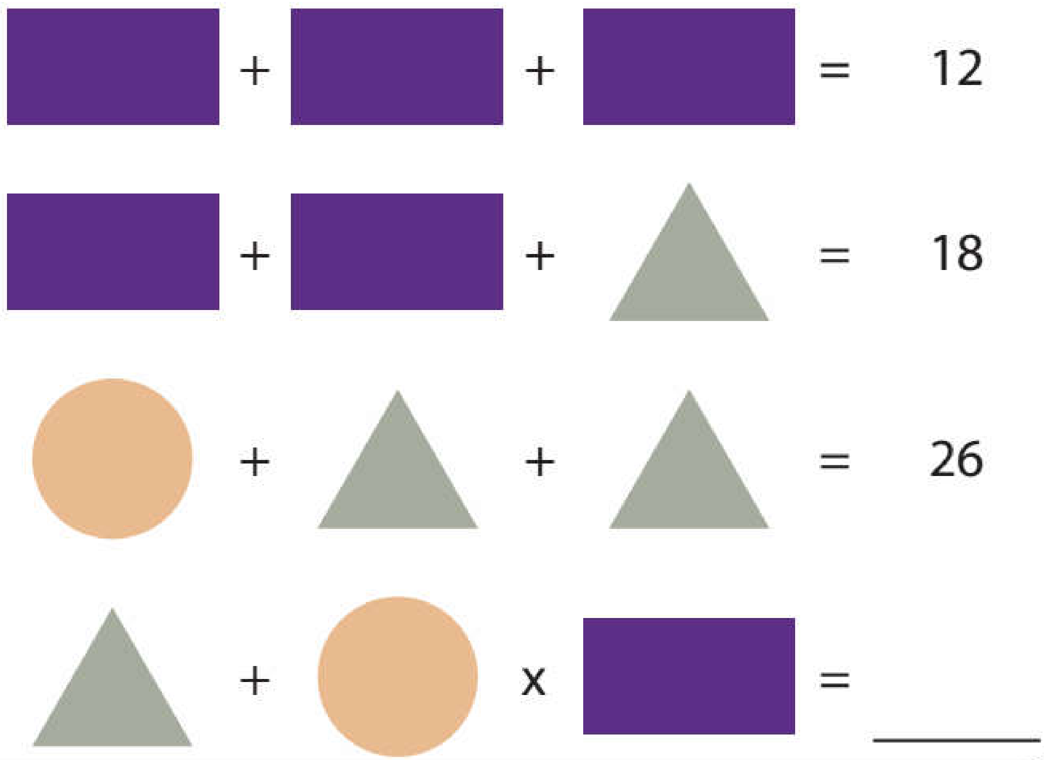
G E M S

G	E	M	S
Groupings	Exponents	Multiply/Divide (Left to Right)	Subtract/Add (Left to Right)
( ) { } [ ]	n^2	÷ / ×	+ −

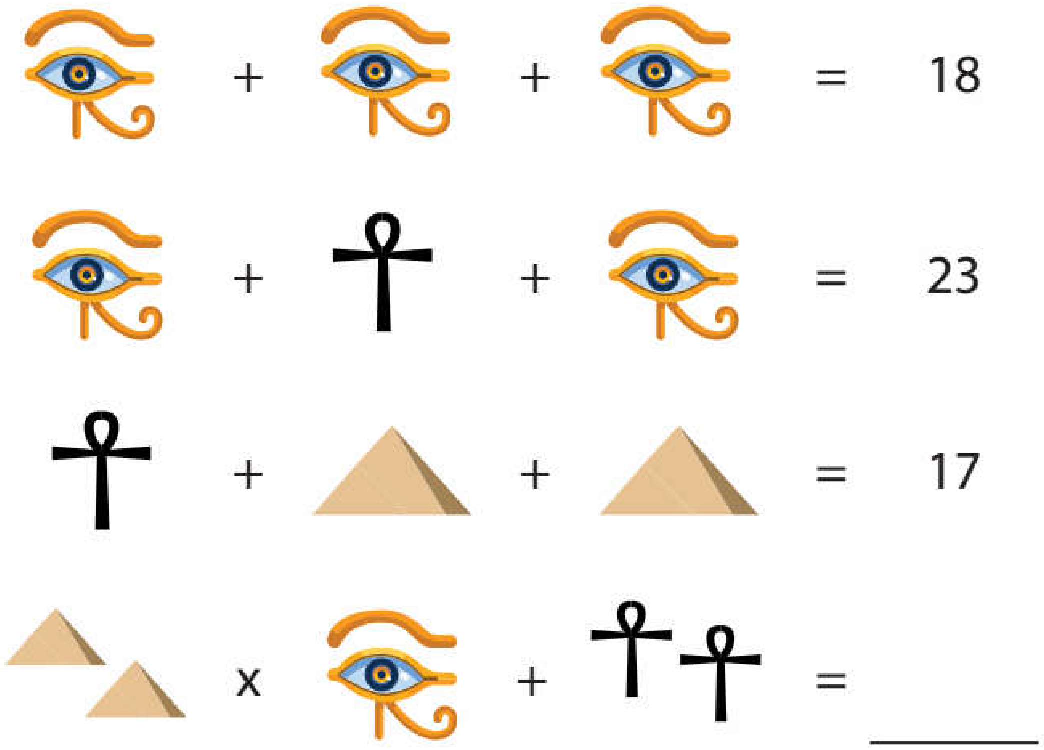
4 + 10 ÷ 2
4 + 5
4 + 5
9



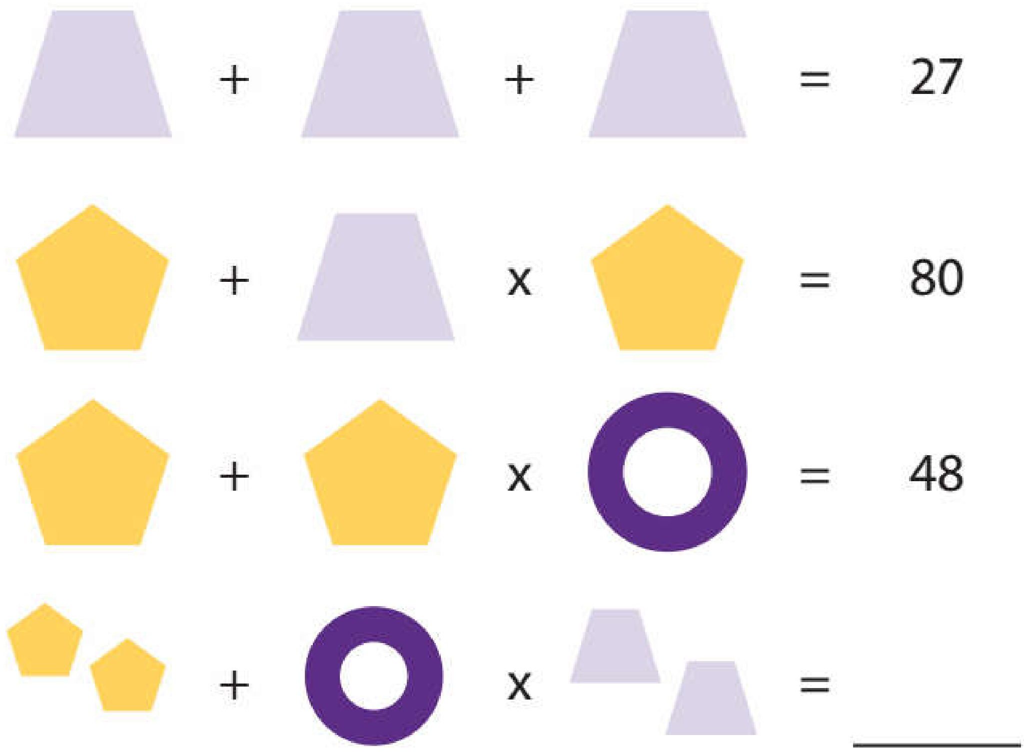
1.



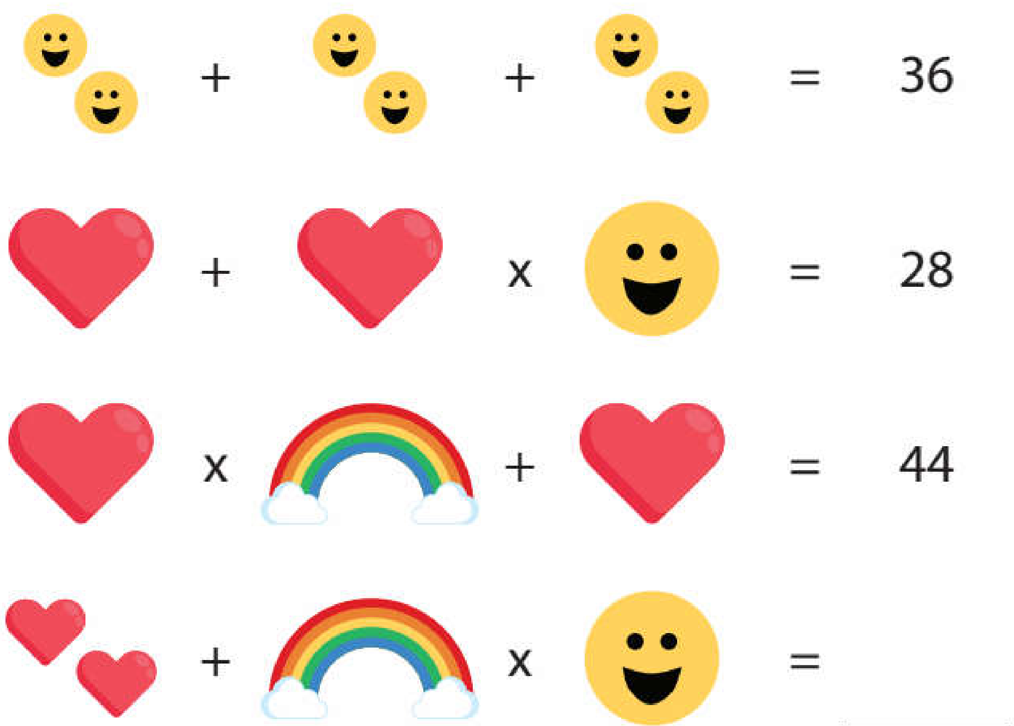
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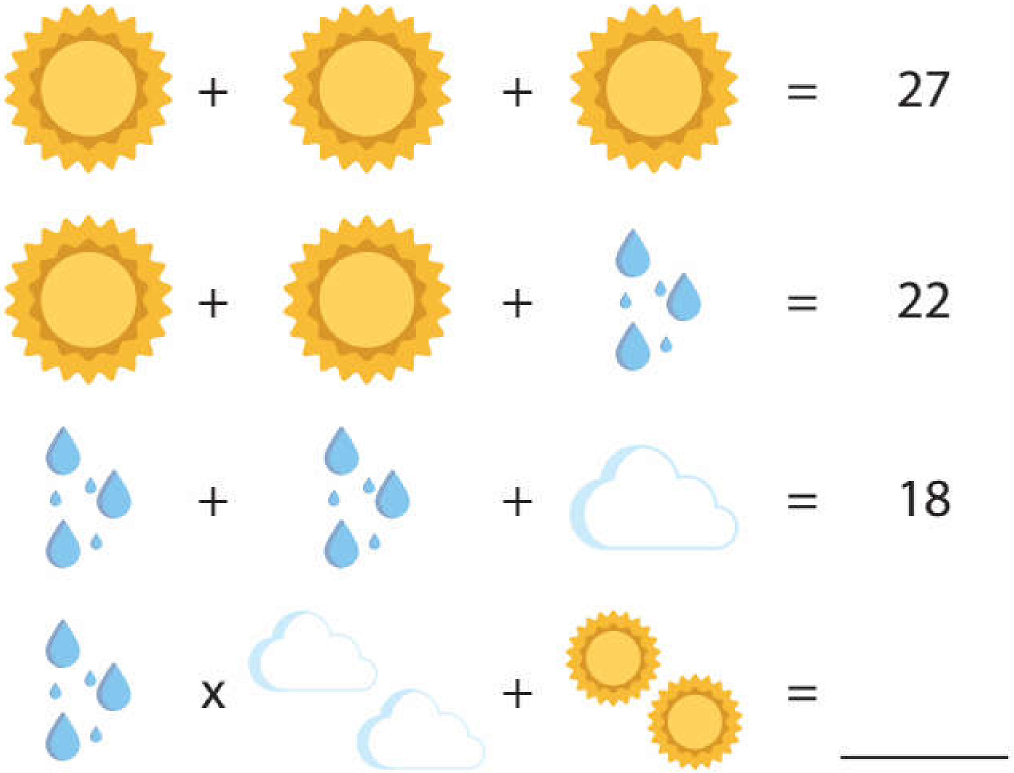
3.



4.



5.



PRACTICE

Follow the standard order of operations to solve.

1. 8 x 2 + 13 = ______
2. 5 x 6 – 12 = ______
3. 200 – 80 x 2 = ______
4. 5 + 8 ÷ 2 = ______
5. 20 ÷ 5 + 5 = ______

ACCESS

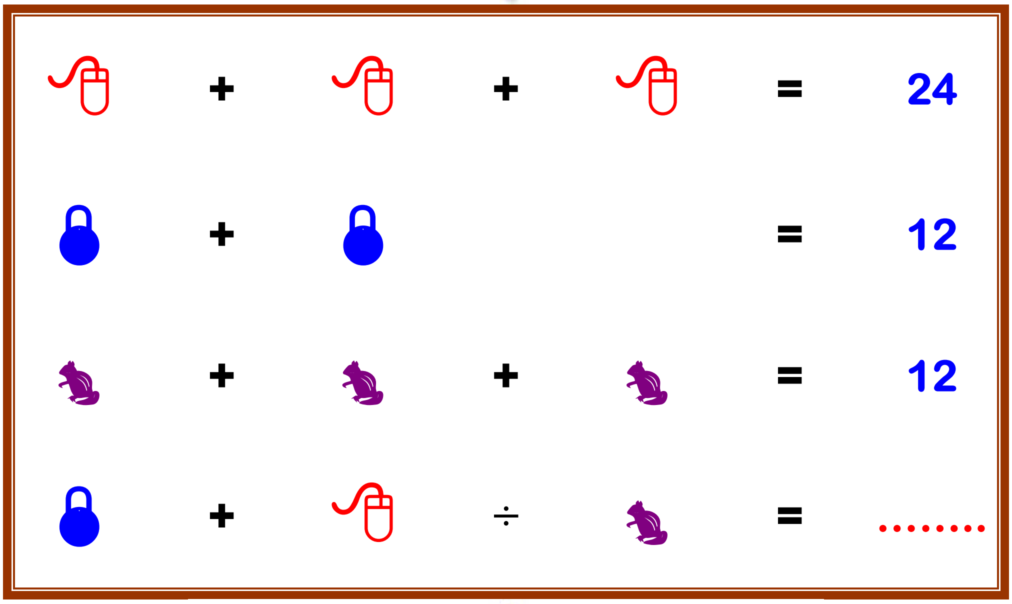
Which Does Not Belong? Solve the problems. Then, think about which problem does not belong in the set. Highlight or circle the problem you think does not belong and explain your thinking.

1. 6 x 4 – 4 = ______________
2. 100 – 80 x 1 = ______________
3. 60 + 20 – 50 = ______________
4. 2,356 – 2,336 = ______________

PRACTICE

Solve the problems. Show your work.

1. 18 x 2 + 8 – 3 = ______________
2. 73 – 60 + 15 ÷ 3 = ______________
3. 4 + 4 + 5 x 10 = ______________
4. 80 ÷ 8 – 7 = ______________



Homework

✈	+	✈	+	✈	=	27
⌨	+	⌨			=	10
🖩	+	🖩			=	6
✈	+	⌨	+	🖩	=	....

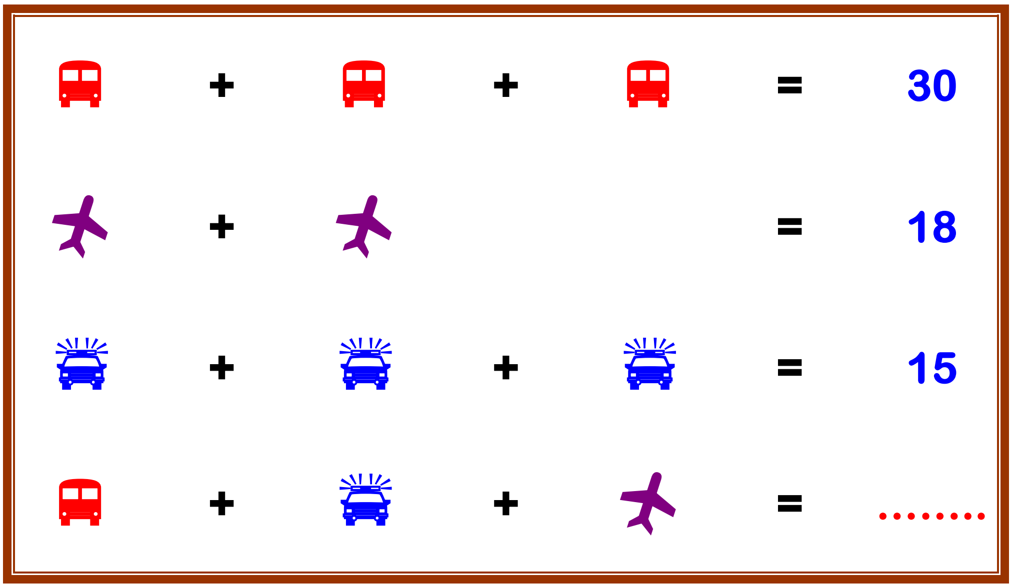
🏆	+	🏆	+	🏆	=	30
✈	+	✈			=	14
📱	+	📱	+	📱	=	9
🏆	+	✈	-	📱	=	....



🐈	+	🐈	+	🐈	=	15
🖱	+	🖱			=	8
✂	+	✂			=	6
🐈	+	🖱	+	✂	=	....

🦊	+	🦊	+	🦊	=	21
🕊	+	🕊			=	6
🖩	+	🖩	+	🖩	=	9
🦊	+	🕊	×	🖩	=	....





$3 + 2 \times 2 - 1 =$ ....

$3 + 6 \div 3 - 3 =$ ....

$5 + 2 \times 3 - 1 =$ ....

$(2 + 8) \div 2 - 3 =$ ....

$7 + 3 \times 3 - 6 =$ ....

$2 + 8 \div 2 - 3 =$ ....

$(2 + 2) \times 3 - 5 =$ ....

$3 + 8 \div 4 - 3 =$ ....

$9 + 2 \times 5 - 9 =$ ....

$(9 + 7) \div 4 - 3 =$ ....